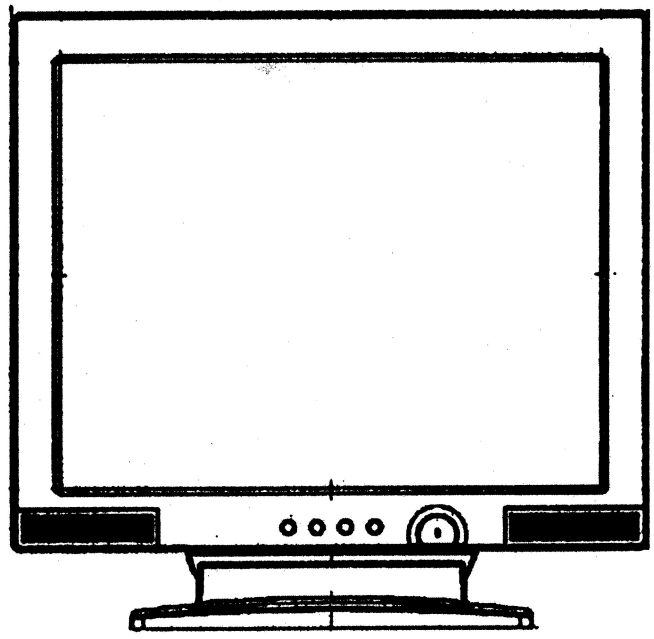
Service Manual



Model : Belinea 101910

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FCC INFORMATION
This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause unacceptable interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures -- reorient or relocate the receiving antenna; increase the separation between equipment and receiver; or connect the into an outlet on a circuit different from that to which the receiver is connected.

FCC WARNING
To assure continued FCC compliance, the user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. Also, any unauthorized changes or modifications to Amtrak products will void the user's authority to operate this device. Thus Maxdata will not be held responsible for the product and its safety.

CE CERTIFICATION
This device complies with the requirements of the EEC directive 89/336/EEC with regard to "Electromagnetic compatibility."

SAFETY CAUTION
Use a power cable that is properly grounded. Always use the AC cords as follows – USA (UL); Canada (CSA); Germany (VDE); Switzerland (SEV); Britain (BASEC/BS); Japan (Electric Appliance Control Act); or an AC cord that meets the local safety standards.

Chapter 1 Features

The Belinea 101910 is a world class TFT LCD analog and digital display monitor that includes the following features:

1.1. On Screen Display Controls:

User friendly buttons [1, Select (DOWN / UP), 2, Power] allowing for picture perfect quality. User can define display mode or reset to default settings. Help menu contains: CONTRAST; AUTO CONTRAST; VIDEO SOURCE; BRIGHTNESS; COLOR; LCD ADJUST; LANGUAGE; MISC

1.2. Power Supply Support

Ability to accept voltages from 90 ~ 264Vac (Universal), thus allowing a full range of input AC power supply

1.3. Power Saving System

This environmental friendly product is able to reduce power consumption by 75% in Suspend Mode and by mode than 95% in OFF Mode

1.4. Frequency Range

Monitor can support video standards from VGA to SXGA, where horizontal frequency ranges from 30 ~ 80KHz and vertical frequency ranges from 50 ~ 75Hz and digital input can up to 135MHz bandwidth.

Chapter 2 Specification

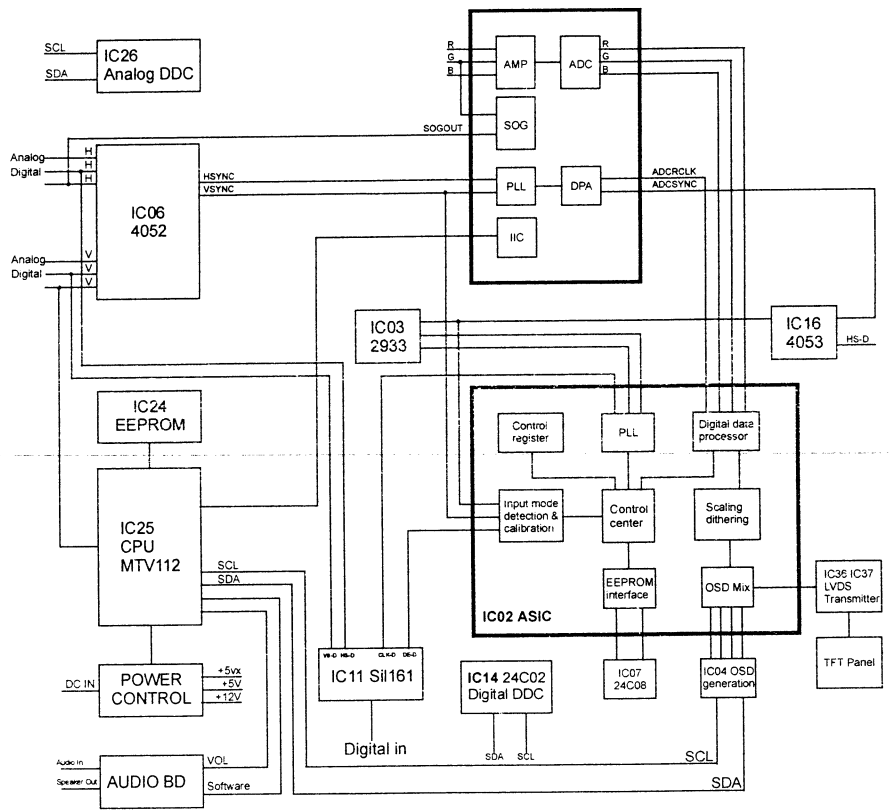
LCD Panel	19.0 inch diagonal viewable screen, Anti-glare TFT Active Fujitsu Panel, 0.27mm pixel pitch, Ambit Inverter
Maximum Viewing Angles	Horizontal: 170° (min) Vertical: 170° (min)
Signal Input	Video: RGB analog, 0.7Vp-p, 75ohms Sync: H/V Sseparate or composite sync, TTL Horizontal: 30 ~ 82KHz Vertical: 50 ~ 75Hz
Connector	Analog: 15pin mini D-sub Digital: 24 Pin DVI_D
Maximum Resolution	1280x1024
Video Bandwidth	135MHz normal
Display Area	376.32mm (H) x 301.056mm (V)
Power Voltage	90 ~ 264Vac @ 50 ~ 60Hz (auto switch), 12Vdc 4.16A
Power Consumption	60W max.
Operating Conditions	Temperature: 32°F to 104°F (0°C to 40°C) Humidity: 10% to 90% (no condensation) Altitude: to 10,000 feet
Storage Conditions	Temperature: -4°F to +140°F (-20°C to +60°C) Humidity: 10% to 90% (no condensation) Altitude: to 40,000 feet
Dimensions	Physical:
Weight	

Chapter 3 On Screen Display

OSD (On Screen Display) function is supported on each the TFT LCD analog display monitor and is controlled by four easy to use buttons – 1, Select DOWN, Select UP, 2 and Power.

Menu	Sub-Function	Value
CONTRAST		ADJUSTMENT BAR
AUTO CONTRAST		
VIDEO SOURCE		ANALOG / DIGITAL
BRIGHTNESS		ADJUSTMENT BAR
COLOR	PRESET 1	6500°K
	PRESET 2	9300°K
	RED	ADJUSTMENT BAR
	GREEN	ADJUSTMENT BAR
	BLUE	ADJUSTMENT BAR
	MAIN MENU	
LCD ADJUST	PC / MAC	ADJUSTMENT BAR
	H- SIZE	ADJUSTMENT BAR
	H- POSITION	ADJUSTMENT BAR
	V- POSITION	ADJUSTMENT BAR
	FINE TUNE	
	AUTO- SYNC	
	MAIN- MENU	
LANGUAGE	ENGLISH	
	FRANCAIS	
	DEUTSCH	
	ITALIANO	
	ESPANOL	
MISC	H- OSD POSITION	ADJUSTMENT BAR
	V- OSD POSITION	ADJUSTMENT BAR
	SMOOTHING	ADJUSTMENT BAR
	INVISIBLE	ON / OFF
	INFORMATION	
	RECALL	
	MAIN MENU	
EXIT		

Chapter 4 Block Diagram



Chapter 5 PCB I/O Connections

5.1. Main Board I/O Connections

5.1.1. W04 CONNECTION (RIGHT→LEFT) "OSD CONTROL"

Pin	Description
1	"-" Key
2	" Function " Key
3	"+" Key
4	Select
5	LED 1
6	LED 2
7	Ground
8	Power 1
9	Power 2

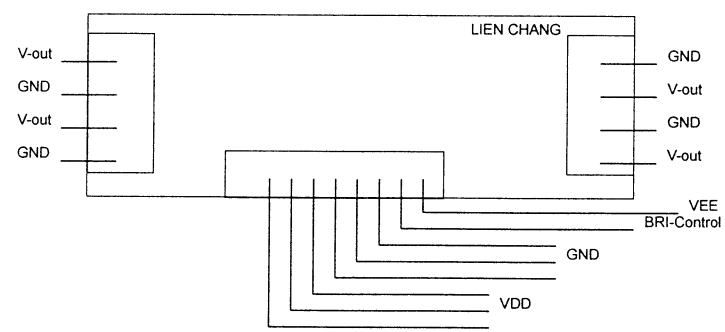
5.1.2. W05 CONNECTION (LEFT→RIGHT) "INVERTER CONTROL"

Pin	Description
1	+12V
2	+12V
3	+12V
4	Ground
5	Ground
6	Ground
7	Control
8	V Enable

5.1.3. W07 CONNECTION "VIDEO SIGNAL OUT TO LCD PANEL"

Pin	Description	Pin	Description
1	Ground	39	TXO3-
2	Ground	40	Ground
3	TXE3+	41	TXOCK+
4	TXE3-	42	TXOCK-
5	TXECK+	43	TXO2+
6	TXECK-	44	TXO2-
7	Ground	45	Ground
8	TXE2+	46	TXO1+
9	TXE2-	47	TXO1-
10	TXE1+	48	TXO0+
11	TXE1-	49	TXO0-
12	Ground	50	Ground
13	TXE0+	51	VLCD
14	TXE0-	52	VLCD
15	TXO3+	53	VLCD

5.2. Inverter Board I/O Connections



Note: Manufacturer's name must be on the printed side for the Inverter Board to be facing up.

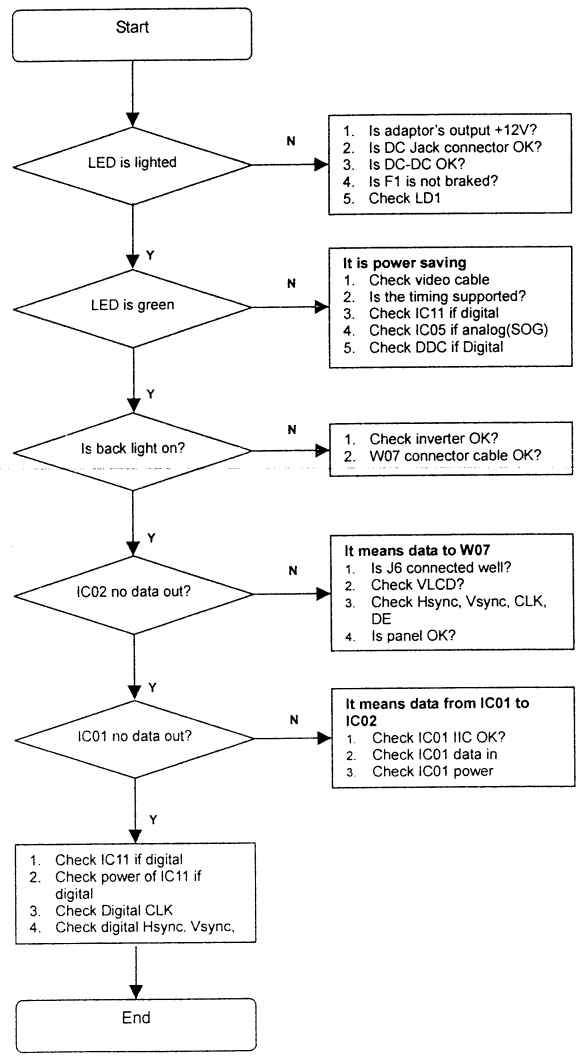
Chapter 6 Timing Chart

This timing chart is already preset for TFT LCD monitor

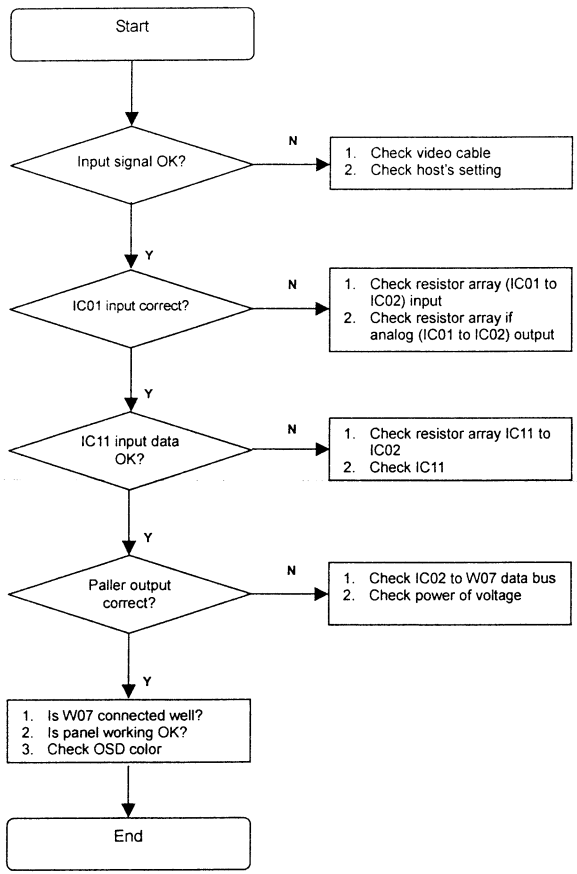
Timing	Horizontal Polarity	Horizontal Frequency	Vertical Polarity	Vertical Frequency
640x350 VGA	+	31.47 KHz	-	70.09 Hz
720x400 VGA	-	31.46 KHz	+	70.08 Hz
640x400 VGA	-	31.46 KHz	+	70.08 Hz
640x480 VGA	-	31.47 KHz	-	60.05 Hz
640x480 VESA	-	37.86 KHz	-	72.81 Hz
640x480 VESA	-	37.50 KHz	-	75.00 Hz
640x480 VESA	-	35.00 KHz	-	66.66 Hz
800x600 VESA	+	35.15 KHz	+	56.25 Hz
800x600 VESA	+	37.87 KHz	+	60.31 Hz
800x600 VESA	+	48.07 KHz	+	72.18 Hz
800x600 VESA	+	46.87 KHz	+	75.00 Hz
1024x768 VESA	-	48.36 KHz	-	60.00 Hz
1024x768 VESA	-	56.47 KHz	-	70.06 Hz
1024x768 VESA	-	58.03 KHz	-	71.91 Hz
1024x768 VESA	+	60.02 KHz	+	75.02 Hz
1280x1024 VESA	-	60.24 KHz	-	74.92 Hz
832x624 MAC	-	37.86 KHz	-	72.80 Hz
1280x1024 MAC	+	80.00 KHz	+	75.00 Hz

Chapter 7 Trouble Shooting

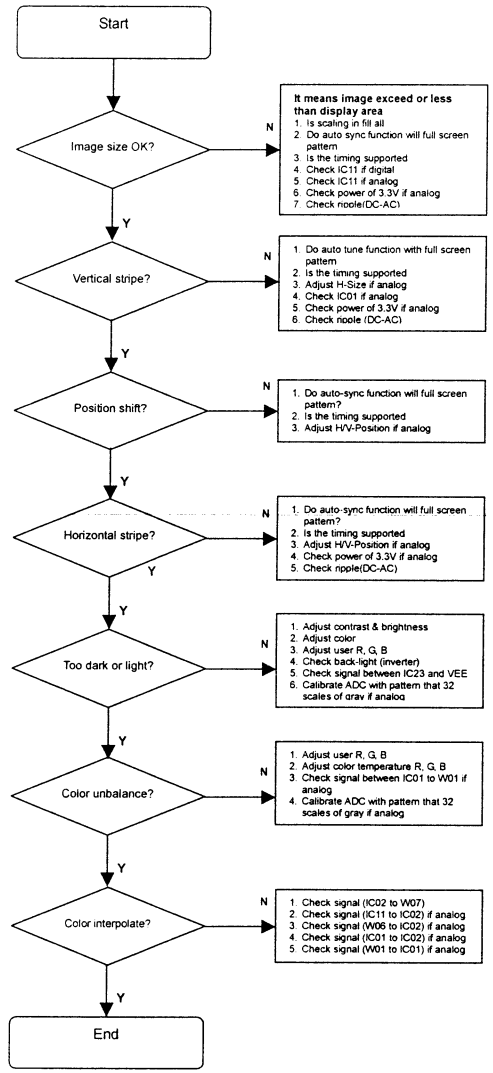
7.1. Monitor Display Nothing



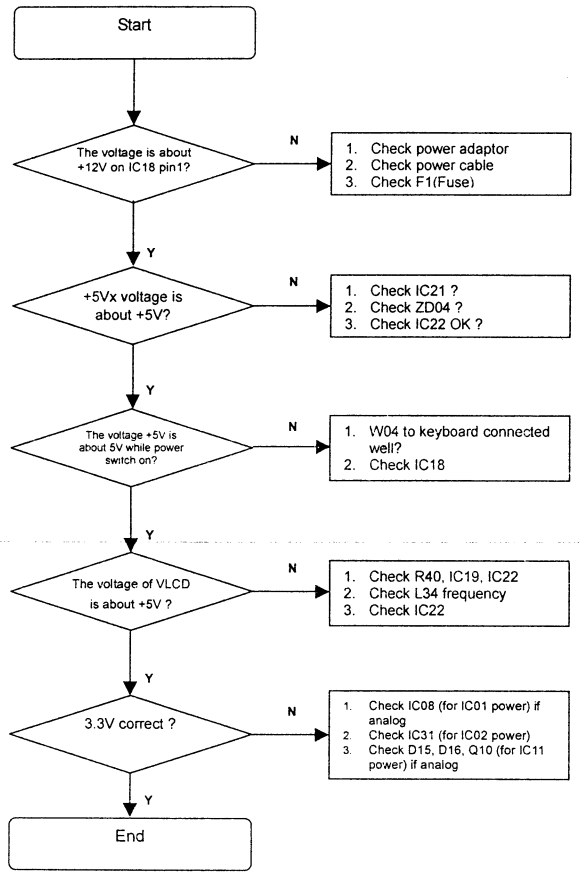
7.2. R, G, B Color not Correct



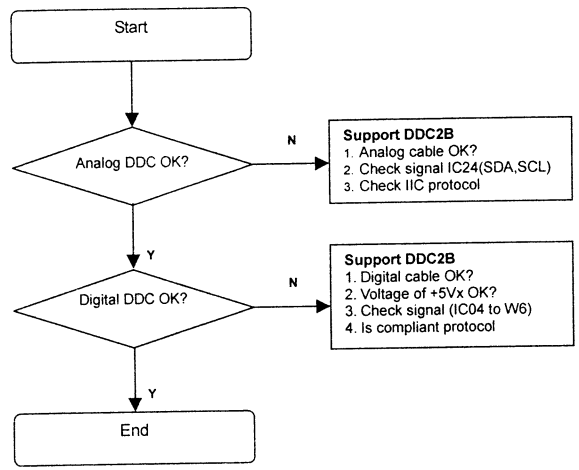
7.3. Improper Quality is not Good



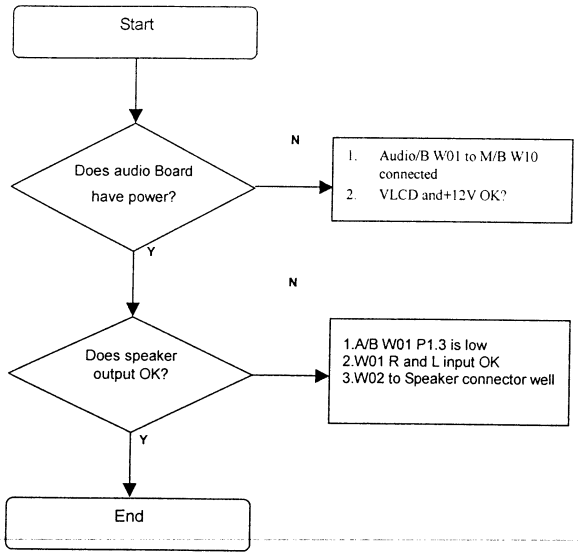
7.4. Trouble of DC-DC Converter



7.5. Trouble of DDC Reading



7.6. Trouble of Audio



Chapter 8 Theory of Circuit Operation

8.1. Summary

The Belinea101910 is a dual input, multi-frequency and multi mode color TFT LCD monitor. It supports different resolutions including SXGA, XGA, SVGA, VGA and other various high-resolution modes up to 1280x1024 for IBM, PC compatibles, Power PC and Macintosh. Belinea101910 uses a TFT LCD panel with a 0.294mm pixel pitch, provides 16.7 million color image.
As the previous block diagram illustrates, Belinea101910 uses the Analog/Digital Interface Controller (IC02) ASIC for mode detection and resolution scaling from its preset values. Digital input we use Sil161 / Sill1153B (IC11). To extract TMDS link. The purpose of the two set of PLL is to provide the clock from multiple horizontal synchronous frequencies. The AD9884 (IC01), include PLL1 and A/D converters sample clock. PLL2 produces the LCD panel's pixel clock with the TLC2933 (IC03).

Furthermore, each TFT LCD monitor uses the 24LC21 (IC26) chip to provide DDC2B™ with Analog Plug & Play, 24C02 (IC14) for digital interface Plug & Play. The DDC data format is EDID v1.3.

Upon receiving video signal input, the Analog Interface Controller (Digital Process and Control System) will trigger the mode detection function such that the internal controls can use the ROM preset information to drive the Analog Interface Controller. In addition, the preset values can determine A/D converter clock; LCD pixel clock; line buffer input/output rate; V-Sync and H-Sync pulse width; back porch and front porch to provide optimal performance for the TFT LCD monitors.

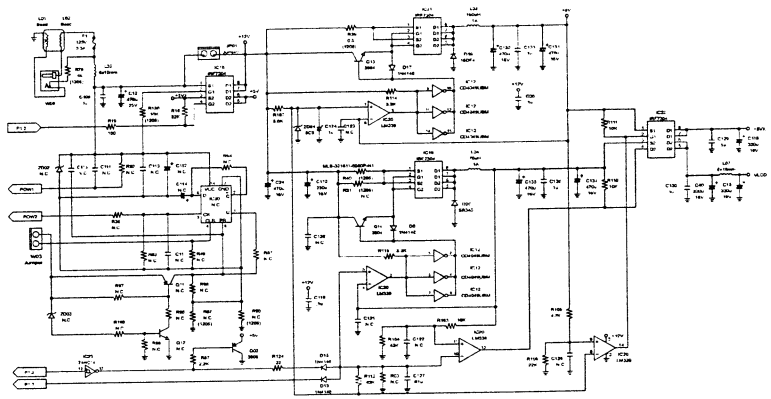
Digital process and control system allows uses to control OSD menu values to change monitor setting that includes Auto-SYNC , AUTO-CONTRAST, brightness, contrast, color adjust, H/V position and H size. The following sections are a breakdown of the TFT LCD display control boards major section.

8.2. Analog Signal and EDID Process

This product uses 74F153 as a signal switch in order to support composite SYNC and SYNC on Green timings. The MPU (IC25) in this product provides the differential function to the Composite SYNC, so the SYNC processor circuit is simplified. The free run function in this product also make user to easily know the input signal is out of product specification or interrupted. When separated SYNC is detected through the V-in and H-in, MPU will set both the H-select and V-select will be X0, Y0 and MPU select digital interface will set IC06 X1, Y1 and MPU select SYNC on Green H-Sync set to X2, V-Sync set to Y2, when composite is select X3, Y3.

V-composite is the vertical sync separated from the composite sync through MPU. And IC01 (AD9884) extracts H-Sync from Green. On the other hand, external system read IC26 EDID data by SDA and SCL buses.

8.3. Power and CPU Control System



This product uses an external power adaptor to provide the DC+12 voltage. In order to greatly reduce the power consumption when in power saving stage, the circuit is used not only to convert the +12V to +5V, but also to control the +5V ON/OFF status. When +12Vdc current enters W09 12V enters the whole system.

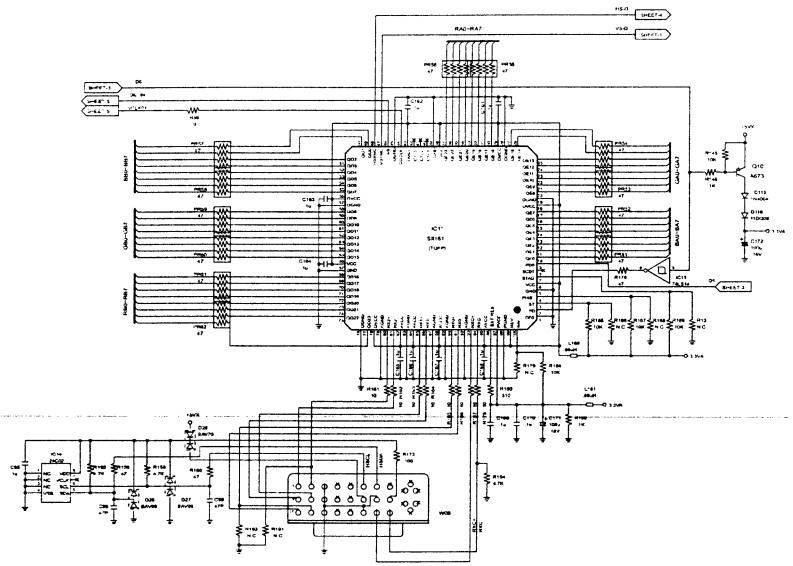
There are two regulators that converter the 12V to 5V. They are +5Vx and VLCD. The comparator or of IC20 will make the output of two regulators as a feed back to compare to the reference voltage. The compared result will then control ON/OFF of IC19.

Time to achieve the voltage regulation affects ZD04 will create the reference voltage. Q13, Q14 and MC4049 are basically used to speed up the MOSFET ON/OFF switching time in order to reduce IC19 power consumption. This product also equips with over-voltage protection circuit. When voltage of +5Vat W09 is over 6Volts, IC20 pin14 will be pull high and Power MOS will be turned off, the voltage of +5Vx is not support. The same theory of VLCD.

The +5V and VLCD source provide most of the required power for the Belinea101910 and LCD panel. When system enter the power saving stage, the above two power sources will turn off through pin3 of IC25. The +5V source provides power to the CPU and SYNC processor, so it must be isolated from other power source. When in power saving stage, pin3 of IC25 will be set to low level to make the +5V and VLCD to be cut off.

8.4. TMDS Signal Process

This product uses IC11(Sil161) for digital interface, IC14(24C02) is digital interface DDC data and uses W06 DVI interface for TMDS signal to Sil161. When digital interface D6 is at low level and generates DE, CLK, H-Sync. V-Sync to AM121-2; when D6 is at high level the digital chip enters power down mode.



8.4.1. General Description

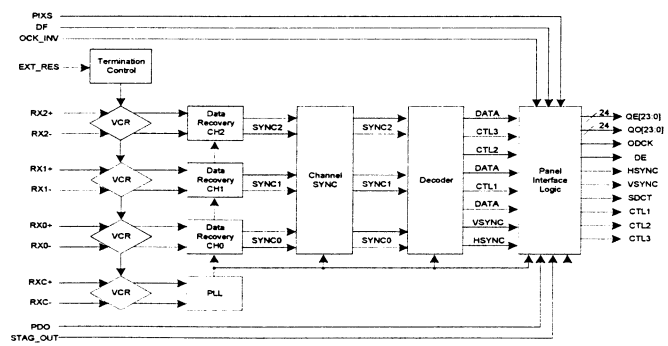
The Sil161 uses PanelLink Digital technology to support displays ranging from VGA to SXGA (25-165MHz) which is ideal for desktop and specialty applications. The Sil161 receiver supports up to true color panels (24 bit/pixel, 16.7M colors) in 1 or 2 pixels/clock mode, and also features an inter-pair skew tolerance up to 1 full input clock cycle. In addition, the receiver output data is time staggered to reduce ground bounce which affects EMI. Since all PanelLink products are designed on scaleable CMOS architecture to support future performance requirements while maintaining the same logical interface. System designers can be assured that the interface will be fixed through a number of the technology and performance generations.

PanelLink Digital technology simplifies PC design by resolving many of the system level issues associated with high-speed digital design, providing the system designer with a digital interface solution that is quicker to market and lower in cost.

8.4.2. Features

8.4.2-a. Scaleable Bandwidth : SXGA(25-165MHz)
8.4.2-b. Low Power 3.3V core operation & power-down mode
8.4.2-c. High Skew Tolerance : 1 full input clock cycle (15ns at 65MHz)
8.4.2-d. Time staggered data output for reduced ground bounce
8.4.2-e. Sync Detect for Plug & Display "Hot Plugging"
8.4.2-f. Cable Distance Support : over 5m with twisted-pair, fiber-optics ready
8.4.2-g. Compliant with : VESA® P&D™ , VESA®FPDI-2™ , VESA®TMDS™ , DFP Port

8.4.3. Function Block Diagram



8.4.4. Power Management Pins Description

Pin Name	Pin #	Type	Description
SCDT	8	Out	Sync Detect. A HIGH level is outputted when DE is actively toggling indicating that the link is alive. A LOW level is outputted when DE is inactive, indicating the link is down. Can be connected to PDO to power down the outputs when DE is not detected. The SCDT output itself, however, Remains in the active mode at all times.
PDO	9	In	Output Driver Power Down (active LOW). A HIGH level indicates normal operation. A LOW level puts all the output drivers only (except SCDT and CTL1) into a high impedance (tri-stats) mode. A weak internal pull-down device brings each output to ground. PDO is a sub-set of the PD description. The chip is not in power-down mode with this pin. There is an internal pull-up resistor that defaults the chip to normal operation if left unconnected. SCDT and CTL1 are not tri-stated by this pin.
PD	2	In	Power Down (active LOW). A HIGH level indicates normal operation and a LOW level indicates power down mode. During power down mode, all output buffers are disabled and brought low, all analog logic is powered down, and all inputs are disabled.

8.4.5. Differential Signal Data Pins Description

Pin Name	Pin #	Type	Description
RX0+	90	Analog	TMDS Low Voltage differential Signal input data pairs.
RX0-	91	Analog	
RX1+	85	Analog	
RX1-	86	Analog	
RX2+	80	Analog	
RX2-	81	Analog	
RXC+	93	Analog	TMDS Low Voltage differential Signal input data pairs.
RXC-	94	Analog	
PDO	9	In	Impedance Matching Control. Resistor value should be ten times the characteristic impedance of the cable. In the common case of 50Ω transmission line, an external 500Ω resistor must be connected between AVCC and this pin.

8.4.6. Output Pins Description

Pin Name	Pin #	Type	Description
QE23 - QE0	See Sil161A Pin Diagram	Out	Output Even Data [23:0] corresponds to 24-bit pixel data for 1-pixel/clock input mode and to the first 24-bit pixel data for 2-pixels/clock mode. Output data is synchronized with output data clock (ODCK). Refer to the TFT Signal Mapping application note (Sil/AN-0007) which tabulates the relationship between the input data to the transmitter and output data from the receiver. A low level on PD or PDO will put the output drivers into a high impedance (tri-state) mode. A weak internal pull-down device brings each output to ground.
QO23 - QO0	See Sil161A Pin Diagram	Out	Output Odd Data [23:0] corresponds to the second 24-bit pixel data for 2-pixels/clock mode. During 1-pixel/clock mode, these outputs are driven low. Output data is synchronized with output data clock (ODCK). Refer to the TFT Signal Mapping application note (Sil/AN-0007) which tabulates the relationship between the input data to the transmitter and output data from the receiver. A low level on PD or PDO will put the output drivers into a high impedance (tri-state) mode. A weak internal pull-down device brings each output to ground.
ODCK	44	Out	Output Data Clock. This output can be inverted using the OCK_INV pin. A low level on PD or PDO will put the output driver into a high impedance (tri-state) mode. A weak internal pull-down device brings the output to ground.
DE	46	Out	Output Data Enable. This signal qualifies the active data area. A HIGH level signifies active display time and a LOW level signifies blanking time. This output signal is synchronized with the output data. A low level on PD or PDO will put the output driver into a high impedance (tri-state) mode. A weak internal pull-down device brings the output to ground.
HSYNC	48	Out	Horizontal Sync input control signal.
VSYNC	47	Out	Vertical Sync input control signal.
CTL1	40	Out	General output control signal 1. This output is not powered down by PDO.
CT L2	41	Out	General output control signal 2.
CTL3	42	Out	General output control signal 3. A low level on PD or PDO will put the output drivers (except CTL1 by PDO) into a high impedance (tri-state) mode. A weak internal pull-down device

			brings each output to ground.

8.4.7. Reserved Pin Description

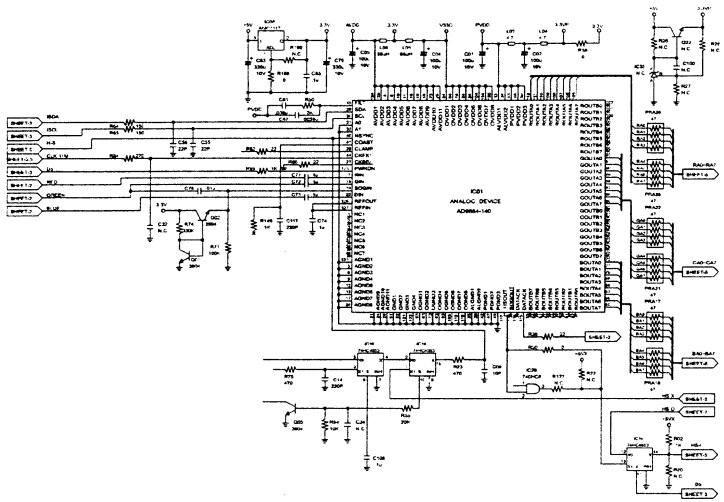
Pin Name	Pin #	Type	Description
Reserved	99	In	Must be tied HIGH for normal operation.

8.4.8. Power and Ground Pin Description

Pin Name	Pin #	Type	Description
VCC	6,38,67	Power	Digital Core VCC, must be set to 3.3V.
GND	5,39,68	Ground	Digital Core GND.
OVCC	18,29,43,57,78	Power	Output VCC, must be set to 3.3V.
OGND	19,28,45,58,76	Ground	Output GND.
AVCC	82,84,88,95	Power	Analog VCC must be set to 3.3V.
AGND	79,83,87,89,92	Ground	Analog GND.
PVCC	97	Power	PLL Analog VCC must be set to 3.3V.
PGND	98	Ground	PLL Analog GND.

8.4.9. Configuration Pins Description

Pin Name	Pin #	Type	Description
OCK_INV	100	In	ODCK Polarity. A LOW level selects normal ODCK output. A HIGH level selects inverted ODCK output. All other output signals are not affected by this pin. They will maintain the same timing no matter the setting of OCK_INV pin.
PIXS	4	In	Pixel Select. A LOW level indicates one pixel (up to 24-bits) per clock mode using QE[23:0] A HIGH level indicates two pixels (up to 48-bits) per clock mode using QE[23:0] for first pixel and QO[23:0] for second pixel.
DFO	1	In	Output Data Format. For all DVI applications, this pin should be tied LOW.
STAG_OUT	7	In	Staggered Output. A HIGH level selects normal simultaneous outputs on all odd and even data lines. A LOW level selects staggered output drive. This function is only available in 2-pixels per clock mode.
ST	3	In	Output Drive. A HIGH level selects HIGH output drive strength. A LOW level selects LOW output drive strength.



8.5. Analog – Digital Conversion Process

8.5.1. General Description

The AD9884 is a complete 8-bit 140MSPS, monolithic graphics digitizer optimized for digitizing RGB graphics signals from personal computers and workstations. Its 140MSPS encode rate capability and full-power analog bandwidth of 500MHz supports display resolutions of up to 1280x1024 at 75Hz with sufficient input bandwidth to accurately acquire and digitize each pixel.

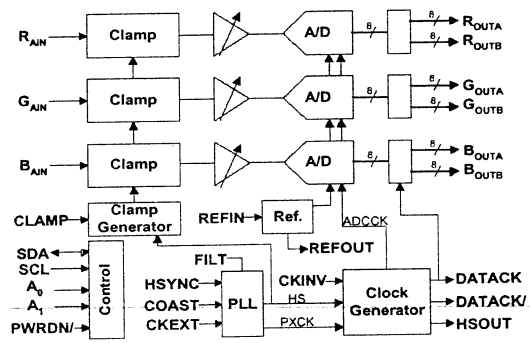
To minimize system cost and power dissipation, the AD9884 includes +1.25V reference, PLL to generate a pixel clock from HSYNC and COAST, and programmable gains, offset, and clamp control. The user provides only a +3.3V power supply, analog input, and HSYNC and COAST signals. Three-state CMOS outputs may be powered from 2.5V to 3.3V.

The AD9884's on-chip PLL generates a pixel clock from HSYNC and COAST inputs. Pixel clock output frequencies range from 20 to 140MHz. PLL clock jitters is 500ps p-p typical relative to the input reference. When the COAST signal is presented, the PLL maintain its output frequency in the absence of HSYNC. A sampling phase adjustment is provided. Data, HSYNC and Clock output phase relationships are maintained. The PLL can be disabled and external clock input provided as the pixel clock.

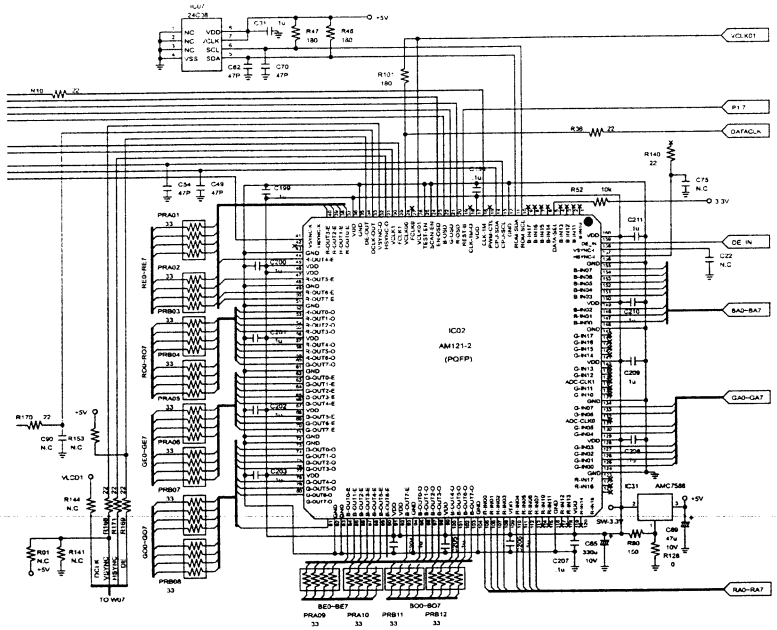
A clamp signal is generated internally or may be provided by the user through the CLAMP input pin. This device is fully programmable via a two wire serial port.

Fabricated in an advanced CMOS process, the AD9884 is provided in a space-saving 128-lead MQFP surface mount plastic package and is specified over the 0°C to +85°C temperature range.

8.5.2. Functional Block Diagram



8.6. Digital Signal Muti-Process



The AM121-2 is enhanced version of the AM100 chip. It is an IC designed for dual-interface SXGA TFT LCD monitors. A dual-interface LCD monitor takes analog or digital RGB signals from a graphic card of a personal computer. This feature makes a dual-interface LCD monitor.

8.6.1. General Description

The analog input RGB signals are first sampled by six channels of the 8-bit A/D converter, and the 48-bit RGB data is then fed into AM121-2. For digital interface, the input data is first received by a TMDS receiver, and the 24/48 bit RGB output data of TMDS receiver is then fed into AM121-2. Without any manual adjustment, AM101 is capable of performing automatic detection of the display resolution and timing of input signals generated from various PC graphic cards. AM121-2 then automatically scales the input image to fill the full screen of the LCD monitor. AM121-2 can interface with TFT LCD panels from various manufacturers by generating either 24-bit or 48-bit RGB signal to the LCD panel based upon the timing parameters saved in the EEPROM.

The AM121-2 implements four advanced display technologies:

8.6.1-a. Advanced mode detection and auto-calibration without any external CPU assist

8.6.1-b. Advanced programmable interpolation algorithm

8.6.1-c. Stand-alone mode support, and

8.6.1-d. Advanced true color support with both dithering and frame modulation

The AM121-2 also provides distinguished system features to the TFT LCD monitor solution. The first one is "plug-and-play", and the second one is "cost-effective system solution". To be truly plug-and-display, the AM121-2 performs automatic input mode detection and auto phase calibration, so the LCD monitor can ensure that the A/D converters' sample clock is precisely synchronized with the input video data, and to preserve the highest image bandwidth for the highest image quality. Furthermore, the AM121-2 can generate output video even when the input signal is beyond the specifications or no input signal is fed.

For "cost-effective system solution", the AM121-2 implements many system support features such as OSD mixer, error status indicators, 2-wire serial interface for both EEPROM and host CPU interface. Another important contributing factor is that the AM121-2 does not require external frame buffer memory for the automatic image

8.6.2. Pin Description

Symbol	Pin #	I/O	Description
B_IN10	1	I	Channel B Data Input Color Blue (LSB)
B_IN11	2	I	Channel B Data Input Color Blue
B_IN12	3	I	Channel B Data Input Color Blue
B_IN13	4	I	Channel B Data Input Color Blue
DATA_SEL	5	I	Indicate Channel A or Channel B contains valid input data: 1: data in Channel A is valid 0: data in Channel B is valid
B_IN14	6	I	Channel B Data Input Color Blue
B_IN15	7	I	Channel B Data Input Color Blue
B_IN16	8	I	Channel B Data Input Color Blue
B_IN17	9	I	Channel B Data Input Color Blue (MSB)
ROM_SCL	10	O	SCL in I^2C for EEPROM interface
ROM_SDA	11	I/O	SDA in I^2C for EEPROM interface
GND	12		Ground
CPU_SCL	13	I	SCL in I^2C for CPU interface
CPU_SDA	14	I/O	SDA in I^2C for CPU interface
PWM_CTL	15	O	PWM control signal (Detail description in PWM Operation Section)
CLK_1M	16	I	Free Running Clock (default: 1MHz)
VDD	17		Power Supply
CLK_1M_O	18	O	Feedback of free Running Clock
RESET_B	19	I	System Reset (active LOW)
R_OSD	20	I	OSD Color Red
G_OSD	21	I	OSD Color Green
B_OSD	22	I	OSD Color Blue
EN_OSD	23	I	OSD Mixer Enable =0, No OSD output =1, R_OUT[7:0] = {R_OSD repeat 8 times} G_OUT[7:0] = {G_OSD repeat 8 times} B_OUT[7:0] = {B_OSD repeat 8 times}
SCAN_EN	24	I	Manufacturing test pin (NC)
TEST_EN	25	I	Manufacturing test pin (NC)
VCLK01	26	I	Input Clock 1
FCLK0	27	O	Input PLL Feedback Clock
VCLK00	28	I	Input Clock 0
FCLK1	29	O	Output PLL Feedback Clock
VCLK1	30	I	Output PLL Output Clock
HSYNC_O	31	O	Output HSYNC (the polarity is programmable through CPU, default is active low)
VSYNC_O	32	O	Output VSYNC (the polarity is programmable through CPU, default is active low)
DCLK_OUT	33	O	Output Clock to Control Panel (the polarity is Programmable through CPU)
DE_OUT	34	O	Output Display Enable for Panel (the polarity is Programmable through CPU, default is active HIGH)
GND	35		Ground

VDD	36		Power Supply
R_OUT0_E	37	O	Output Color Red Even Pixel (left pixel)
R_OUT1_E	38	O	Output Color Red Even Pixel (left pixel)
R_OUT2_E	39	O	Output Color Red Even Pixel (left pixel)
R_OUT3_E	40	O	Output Color Red Even Pixel (left pixel)
VDD	46		Power Supply
R_OUT5_E	47	O	Output Color Red Even Pixel (left pixel)
GND	48		Ground
R_OUT6_E	49	O	Output Color Red Even Pixel (left pixel)
R_OUT7_E	50	O	Output Color Red Even Pixel (left pixel)
GND	51		Ground
R_OUT0_O	52	O	Output Color Red Odd Pixel (right pixel)
R_OUT1_0	53	O	Output Color Red Odd Pixel (right pixel)
R_OUT2_O	54	O	Output Color Red Odd Pixel (right pixel)
R_OUT3_O	55	O	Output Color Red Odd Pixel (right pixel)
VDD	56		Power Supply
R_OUT4_O	57	O	Output Color Red Odd Pixel (right pixel)
R_OUT5_O	58	O	Output Color Red Odd Pixel (right pixel)
R_OUT6_O	59	O	Output Color Red Odd Pixel (right pixel)
R_OUT7_O	60	O	Output Color Red Odd Pixel (right pixel)
GND	61		Ground
G_OUT0_E	62	O	Output Color Green Even Pixel (left pixel)
G_OUT1_E	63	O	Output Color Green Even Pixel (left pixel)
G_OUT2_E	64	O	Output Color Green Even Pixel (left pixel)
G_OUT3_E	65	O	Output Color Green Even Pixel (left pixel)
G_OUT4_E	66	O	Output Color Green Even Pixel (left pixel)
VDD	67		Power Supply
G_OUT5_E	68	O	Output Color Green Even Pixel (left pixel)
G_OUT6_E	69	O	Output Color Green Even Pixel (left pixel)
G_OUT7_E	70	O	Output Color Green Even Pixel (left pixel)
GND	71		Ground
GND	72		Ground
G_OUT0_O	73	O	Output Color Green Odd Pixel (right pixel)
G_OUT1_O	74	O	Output Color Green Odd Pixel (right pixel)
G_OUT2_O	75	O	Output Color Green Odd Pixel (right pixel)
G_OUT3_O	76	O	Output Color Green Odd Pixel (right pixel)
VDD	77		Power Supply
G_OUT4_O	78	O	Output Color Green Odd Pixel (right pixel)
G_OUT5_O	79	O	Output Color Green Odd Pixel (right pixel)
G_OUT6_O	80	O	Output Color Green Odd Pixel (right pixel)
G_OUT7_O	81	O	Output Color Green Odd Pixel (right pixel)
GND	82		Ground
GND	83		Ground
B_OUT0_E	84	O	Output Color Blue Even Pixel (left pixel)
B_OUT1_E	85	O	Output Color Blue Even Pixel (left pixel)
B_OUT2_E	86	O	Output Color Blue Even Pixel (left pixel)
B_OUT3_E	87	O	Output Color Blue Even Pixel (left pixel)
B_OUT4_E	88	O	Output Color Blue Even Pixel (left pixel)
B_OUT5_E	89	O	Output Color Blue Even Pixel (left pixel)
B_OUT6_E	90	O	Output Color Blue Even Pixel (left pixel)

VDD	91		Power Supply
VDD	92		Power Supply
B_OUT7_E	93	O	Output Color Blue Even Pixel (left pixel)
GND	94		Ground
B_OUT0_O	95	O	Output Color Blue Odd Pixel (right pixel)
B_OUT1_O	96	O	Output Color Blue Odd Pixel (right pixel)
B_OUT2_O	97	O	Output Color Blue Odd Pixel (right pixel)
B_OUT3_O	98	O	Output Color Blue Odd Pixel (right pixel)
VDD	99		Power Supply
B_OUT4_O	100	O	Output Color Blue Odd Pixel (right pixel)
B_OUT5_O	101	O	Output Color Blue Odd Pixel (right pixel)
B_OUT6_O	102	O	Output Color Blue Odd Pixel (right pixel)
B_OUT7_O	103	O	Output Color Blue Odd Pixel (right pixel)
GND	104		Ground
R_IN00	105	I	Channel A Data Input Color Red (LSB)
R_IN01	106	I	Channel A Data Input Color Red
R_IN02	107	I	Channel A Data Input Color Red
R_IN03	108	I	Channel A Data Input Color Red
VDD	109		Power Supply
R_IN04	110	I	Channel A Data Input Color Red
R_IN05	111	I	Channel A Data Input Color Red
R_IN06	112	I	Channel A Data Input Color Red
R_IN07	113	I	Channel A Data Input Color Red (MSB)
R_IN10	114	I	Channel B Data Input Color Red (LSB)
R_IN11	115	I	Channel B Data Input Color Red
GND	116		Ground
R_IN12	117	I	Channel B Data Input Color Red
R_IN13	118	I	Channel B Data Input Color Red
VDD	119		Power Supply
R_IN14	120	I	Channel B Data Input Color Red
R_IN15	121	I	Channel B Data Input Color Red
R_IN16	122	I	Channel B Data Input Color Red
R_IN17	123	I	Channel B Data Input Color Red (MSB)
GND	124		Ground
G_IN00	125	I	Channel A Data Input Color Green (LSB)
G_IN01	126	I	Channel A Data Input Color Green
G_IN02	127	I	Channel A Data Input Color Green
G_IN03	128	I	Channel A Data Input Color Green
VDD	129		Power Supply
G_IN04	130	I	Channel A Data Input Color Green
G_IN05	131	I	Channel A Data Input Color Green
ADC_CLK0	132	O	Sample Clock for ADC 0
G_IN06	133	I	Channel A Data Input Color Green
G_IN07	134	I	Channel A Data Input Color Green (MSB)
GND	135		Ground
G_IN10	136	I	Channel B Data Input Color Green (LSB)
G_IN11	137	I	Channel B Data Input Color Green
ADC_CLK1	138	O	Sample Clock for ADC 1
G_IN12	139	I	Channel B Data Input Color Green
G_IN133	140	I	Channel B Data Input Color Green
VDD	141		Power Supply
G_IN14	142	I	Channel B Data Input Color Green

G_IN15	143	I	Channel B Data Input Color Green
G_IN16	144	I	Channel B Data Input Color Green
G_IN17	145	I	Channel B Data Input Color Green (MSB)
GND	146		Ground
B_IN00	147	I	Channel A Data Input Color Blue (LSB)
B_IN01	148	I	Channel A Data Input Color Blue
B_IN02	149	I	Channel A Data Input Color Blue
VDD	150		Power Supply
B_IN03	151	I	Channel A Data Input Color Blue
B_IN04	152	I	Channel A Data Input Color Blue
B_IN05	153	I	Channel A Data Input Color Blue
B_IN06	154	I	Channel A Data Input Color Blue
B_IN07	155	I	Channel A Data Input Color Blue (MSB)
GND	156		Ground
HSYNC_I	157	I	Input HSYNC (any polarity)
VSYNC_I	158	I	Input VSYNC (any polarity)
DE_IN	159	I	DE input for digital interface
VDD	160		Power Supply

8.6.3. Functional Description

The AM121-2 has the following major function block:

8.6.3-a. Input mode detection and auto calibration block

8.6.3-b. Buffer memory and read/write control block

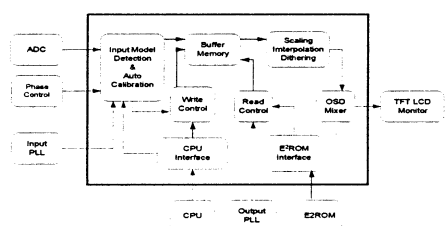
8.6.3-c. Image scaling, interpolation and dithering block

8.6.3-d. OSD mixer and LCD interface block

8.6.3-e. EEPROM interface block

8.6.3-f. CPU interface block

8.6.4. Functional Block Diagram



8.6.5. Supported input modes

AM121-2 can handle up to 14 different input modes. For AM121-2, an input mode is defined by its horizontal resolution with its vertical resolution. The input modes with the same horizontal and vertical resolution but with different frame rates are still considered as one single input mode. In the default EEPROM setup, AM121-2 accepts the following seven input video modes:

- 640 x 350
- 640 x 400
- 720 x 400
- 640 x 480 (VGA)
- 800 x 600 (SVGA)
- 832 x 624 (MAC)
- 1024 x 768 (XGA)
- 1280 x 1024 (SXGA)

Users can easily change the definitions of the acceptable input modes by adjusting the values in the appropriate EEPROM entries. There is no frame rate restriction on the input modes. However, since the output signal is synchronized with the input signal at the same refresh rate, the input refresh rate has to be within the acceptable range of the LCD panel. The user-defined video modes can be defined by storing appropriate timing information in the EEPROM.

8.6.6. Input mode detection and frequency detection

The AM121-2 can automatically detect the mode of the input signal without any user adjustment or driver running on the PC host or external CPU. This block automatically detects polarity of input synchronization, the sizes of back porch, valid data window, the synchronization pulse width in both vertical and horizontal directions. The size information is then used not only to decide the input resolution, to generate the frequency divider for the input PLL, to lock the PLL output clock with HSYNC, but also to automatically scale the image to full screen and to synchronize the output signal with the input signal.

The detection logic is always active to automatically detect any changes to the input Mode. Users can manually change the input mode information at run time through the CPU interface. Detailed operation of the CPU interface is described in Section 3.6 of "CPU Interface". Mode detection and frequency detection can be independently turned ON or OFF by the external CPU. This feature allows system customers to have better control of the mode-detection and frequency detection process. When the detection is turned OFF, the external CPU can change the input mode and frequency definitions.

8.6.7. Phase calibration

The AM121-2 can automatically calibrate the phase of the sample clock in order to preserve the bandwidth of the input signal and to get the best quality. The AM121-2 implements a proprietary image quality function. During the auto-calibration process, the AM121-2 continues to search for the best phase to optimize the image quality. The output image may display some jitter and blurring during the auto-calibration process, and the image will become crisp and sharp once the optimum phase is found. User can change the sampling clock phase value through the external CPU. Detailed operation of the CPU interface is described in Section 3.6 of "CPU Interface". The phase calibration process can be delayed and even disabled by the external CPU if the system designer wants to have his/her own implementation. The phase calibration can be independently turned ON or OFF by the external CPU.

8.6.8. PWM operation

The AM121-2 implements a unique algorithm to adjust the phase of the A/D converter's sampling clock. An external delay circuit is required to compliment the AM121-2 for the phase-calibration process. The AM121-2 generates a Pulse-Width Modulated (PWM) signal to the external delay circuit. The delay circuit should insert a certain amount of time delay synchronization pulse based upon the width of the PWM signal.

The PWM signal from AM121-2 is a periodical signal with a period that is 1023 times the period of the free-running clock connected to the pin "CLK_1M". System manufacturers may select any frequency for the free running clock. The default clock frequency is 1MHz. System manufacturers also decide the unit delay for the external delay circuit. The delay information is stored in the EEPROM. When the AM121-2 wants to delay the synchronization pulse for N units of delay, it will output the PWM with the high time equal to (N * the period of the free-running clock), and with low time equal to (1023-N)* the period of the free-running clock. When N=1023, the PWM signal stays high all the time, and when N=0, the PWM signal is always low.

8.6.9. Free Running Clock

As described in previous section, a free-running clock is needed for the AM121-2. This clock is used for many of the AM121-2's internal operations. PWM operation is one of them. System manufacturers can select the frequency of the free-running clock, and the default clock frequency is 1MHz. System manufacturers can use an oscillator to generate the free-running clock, and feed that clock directly to the pin "CLK_1M", or use a crystal connecting to "CLK_1M" and "CLK_1M_O".

8.6.10. Image scaling

The AM121-2 supports several different input modes, and the input image may have different sizes. It is essential to support automatic image scaling so that the input image is always displayed to the full screen regardless the input mode. The AM121-2 scales the images in both horizontal and vertical directions. It calculates the correct scaling ratio for both directions based upon the LCD panel resolution and the input mode and timing information produced by the "Input mode detection & auto calibration" block. The scaling ratio is re-adjusted whenever a different input mode is detected. The ratio is then fed to the buffer memory read control logic to fetch the image data with the right sequence and timing. Some of the image data may be read more than once to achieve the scaling effect.

8.6.11. Image Interpolation

AM121-2 supports image interpolation to achieve better image quality. A basic image scaling algorithm replicates the input images to achieve the scaling effect. The replication scheme usually results in a poor image quality. The AM121-2 implements a proprietary interpolation algorithm to improve the image quality. The programmable interpolation is implemented with a 256-entry mapping table in the EEPROM to allow system users to adjust the bi-linear interpolation parameters to control the sharpness and smoothness quality of the image. In the default setting, the mapping table contains a straight line of slope equal to 1, i.e. the data in entry N equal to the value N. If the mapping table contains a line of slope equal to 2, then the output image will be a bit sharper than the image generated by a table with the default setting. Through an external micro-controller, users can chose among different interpolation algorithm.

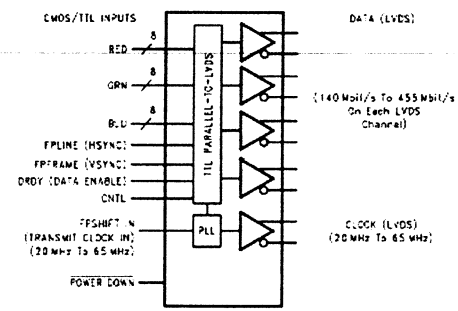
8.6.12. Dithering

AM121-2 supports 16.7 million true colors for a 6-bit panel. Two dithering algorithms are implemented and users can chose between them through the external micro-controller.

8.7. Low Voltage Different Signal Circuit

8.7.1. General Description

The THC63LVDM83A transmitter converts 28 bits of CMOS/TTL data into four LVDS (Low Voltage Differential Signaling) data streams. A phase-locked transmit clock is transmitted in parallel with the data streams over a fifth LVDS link. Every cycle of the transmit clock 28 bits of input data are sampled and transmitted. At a transmit clock frequency of 65MHz, 24 bits of RGB data and 3bits of LCD timing and control data (HSYNC, VSYNC, DATA ENABLE) are transmitted at a rate of 455 Mbps per LVDS data channel. Using a 65MHz clock, the data throughput is 227 Mbytes/sec. The THC63LVDM83A transmitter can be programmed for Rising edge strobe or Falling edge strobe through a dedicated pin. A Rising edge or Falling edge strobe transmitter will inter operate with a Falling edge strobe Receiver without any translation logic.
This chipset is an ideal means to solve EMI and cable size problems associated with wide, high speed TTL interfaces.

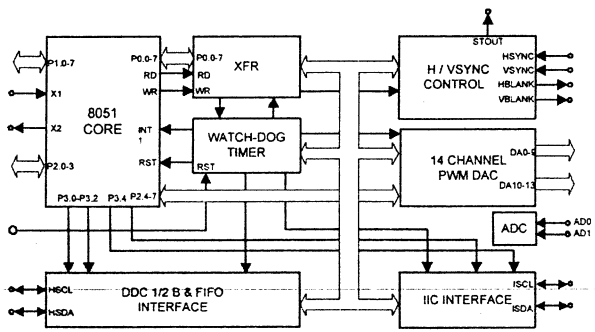


8.7.2. Functional Block Diagram

8.8. MTV112MN32 Description

8.8.1. General Description

The MTV112MN32 micro-controller is an 8501 CPU core embedded device specially tailored to CRT monitor applications. It includes an 8051 CPU core, 384-byte SRAM, 14 built-in PWM DACs, DDC1/DDC2B interface, 24Cxx series EEPROM interface. A/D converter and a 32K bytes internal program Flash ROM.



8.8.2. Functional Block Diagram

8.8.3. Pin Description

Name	Type	Pin#			Description
		40	42	44	
P1.0	I/O	1	1	2	General purpose I/O
P1.1/HALFV	I/O	2	2	3	General purpose I/O / Vsync half frequency output.
P1.2/HALFH	I/O	3	3	4	General purpose I/O / Hsync half frequency output.
P1.3/HCLAMP	I/O	4	4	5	General purpose I/O / Hsync clamp pulse output.
P1.4/AD2	I/O	5	5	6	General purpose I/O / ADC input.
P1.5/AD3	I/O	6	6	7	General purpose I/O / ADC input.
P1.6/AD0	I/O	7	7	9	General purpose I/O / ADC input.
P1.7/AD1	I/O	8	8	10	General purpose I/O / ADC input.
RST	I	9	9	11	Active high reset
HSCL/P3.0/Rxd	I/O	10	10	12	IIC clock / General purpose I/O / Rxd
HSDA/P3.1/Txd	I/O	11	11	13	IIC data / General purpose I/O / Txd
ISDA/P3.2/INT0	I/O	12	12	14	IIC data / General purpose I/O / INT0
HSYNC	I	13	13	15	Horizontal SYNC or Composite SYNC
ISCL/P3.4/T0	I/O	14	14	16	IIC clock / General purpose I/O / T0
VSYNC	I	15	15	17	Vertical SYNC
HBLANK/P4.1	O	16	17	19	Horizontal blank / General purpose output
VBLANK/P4.0	O	17	18	20	Vertical blank / General purpose output
X2	O	18	19	21	Oscillator output
X1	I	19	20	22	Oscillator input
VSS	-	20	21	23	Ground
P2.0/INT0	I/O	21	22	24	General purpose I/O / INT0
P2.1	I/O	22	23	25	General purpose I/O
P2.2	I/O	23	24	26	General purpose I/O
P2.3	I/O	24	25	27	General purpose I/O
DA13/P2.4	I/O	25	26	28	PWM DAC output / General purpose I/O (open-drain)
DA12/P2.5	I/O	26	27	30	PWM DAC output / General purpose I/O (open-drain)
DA11/P2.6	I/O	27	28	31	PWM DAC output / General purpose I/O (open-drain)
DA10/P2.7	I/O	28	29	32	PWM DAC output / General purpose I/O (open-drain)
STOUT/P4.2	O	29	30	33	Self-test video / General purpose output
DA9	O	30	32	34	PWM DAC output / General purpose I/O (open-drain)
DA8	O	31	33	35	PWM DAC output / General purpose I/O (open-drain)
DA7/P5.7	O	32	34	36	PWM DAC output / General purpose I/O (open-drain)
DA6/P5.6	O	33	35	37	PWM DAC output / General purpose I/O (open-drain)
DA5/P5.5	O	34	36	38	PWM DAC output / General purpose I/O (open-drain)
DA4/P5.4	O	35	37	39	PWM DAC output / General purpose I/O (open-drain)
DA3/P5.3	O	36	38	41	PWM DAC output / General purpose I/O (open-drain)
DA2/P5.2	O	37	39	42	PWM DAC output / General purpose I/O (open-drain)
DA1/P5.1	O	38	40	43	PWM DAC output / General purpose I/O (open-drain)
DA0/P5.0	O	39	41	44	PWM DAC output / General purpose I/O (open-drain)
VDD	-	40	42	1	Positive power supply

8.8.4. H/VSYNC Processing

8.8.4-a. H/V Polarity Detection

The Polarity functions detect the input HSYNC/VSYNC high and low pulse duty pluse. If the high pluse duration is longer than that of the low pluse, the negative polarity is asserted; otherwise, positive polarity is asserted. The HPLchg interrupt is set when the Hpol value changes. The VPLchg interrupt is set when the Vpol value changes.

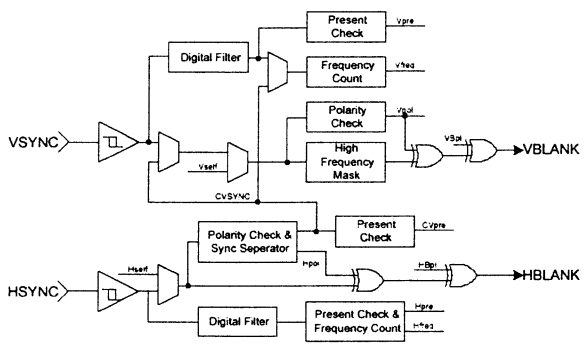
8.8.4-b. Output HBLANK/VBLANK Control and Polarity Adjustment

The HBLANK is the mux output of HSYNC and self-test horizontal pattern. The VBLANK is the mux output of VSYNC, CVSYNC and the self-test vertical pattern. The mux selection and output polarity are S/W controllable. The VBLANK output is cut off when VSYNC frequency is over 200Hz or 133Hz depends on 8MHz/12MHz OSC selection. The HBLANK/VBLANK shares the output pin with P4.1/P4.0

8.8.4-c. VSYNC interrupt

MTV112MN32 checks the VSYNC input pluse and generates an interrupt at its leading edge. The VSYNC1 flag is set each time MTV112MN32 detects a VSYNC pluse.

8.8.4-d. H/V SYNC Processor Block Diagram



8.8.5. DDC & IIC Interface

8.8.5-a. DDC1 Mode

MTV112MN32 enters DDC1 mode after Reset. In this mode, VSYNC is as a data clock. The HSCL pin should remain at high. The data output to the HSDA pin is taken from 8 bytes FIFO in MTV112MN32. MTV112MN32 fetches the data byte from FIFO, then sends it in a 9-bit packet format which includes a null bit (=1) as packet separator. The software program should load EDID data (original stored in EEPROM) into FIFO and take care of the FIFO depth. FIFO sets the FIFOI (FIFO low interrupt) flag when there are fewer than N (N=2,3,4 or 5 controlled by LS1, LS0) bytes to be output to the HSDA pin. To prevent FIFO from emptying, software needs to write EDID data to FIFO as soon as FIFOI is set. On the other hand, FIFO sets the FIFOI flag when its capacity is full. Software should not write additional data to FIFO in such instance. The FIFOI interrupt can be masked or enabled by an EFIFO control bit. A simple way to control FIFO is to set (LS1, LS0=1,0) and enable FIFOI interrupt, then software may load 4 bytes into FIFO each time a FIFOI interrupt arises. A special control bit "LDFIFO" can reduce the software effort when EDID data is stored in EEPROM. If LDFIFO=1, FIFO will be automatically loaded with MBUF data when software reads MBUF XFR.

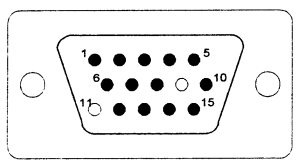
8.8.5-b. DDC2B Mode

MTV112MN32 switches to DDC2B mode when it detects a high to low transition on the HSCL pin. Once MTV112MN32 enters DDC2B mode, the host can access the EEPROM using IIC bus protocol as if the HSDA and HSCL are directly bypassed to ISDA and ISCL pins. MTV112MN32 will return to DDC1 mode if HSCL is kept high for a 128 VSYNC clock period. However, it will lock in DDC2B mode if a valid IIC access has been detected on HSCL/HSDA bus. The DDC2 flag reflects the current DDC status. S/W may clear it by setting CLRDDC. Control bits M128/M256 are used to block the EEPROM write operating from the host if the address is over 128/256

Chapter 9 Pin Assignment

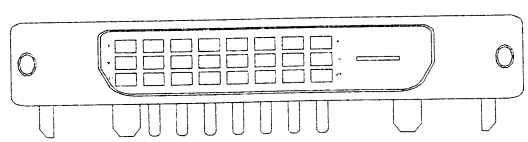
9.1. 15 Pin Mini D-Sub Connector

Pin	Description
1	Red
2	Green
3	Blue
4	Ground
5	Ground
6	R-Ground
7	G-Ground
8	B-Ground
9	+5V (input) from PC
10	G-Ground
11	No connection
12	SDA
13	H-Sync (composite sync)
14	V-Sync
15	SCL

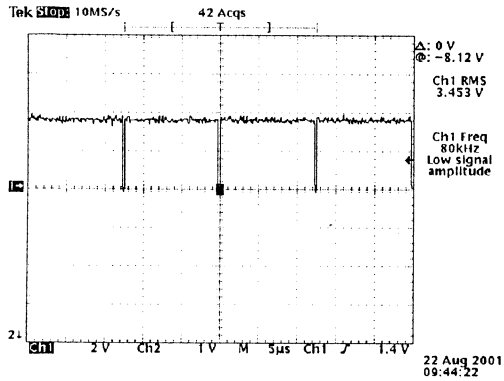


9.2. 24 Pin DVI_D Connector

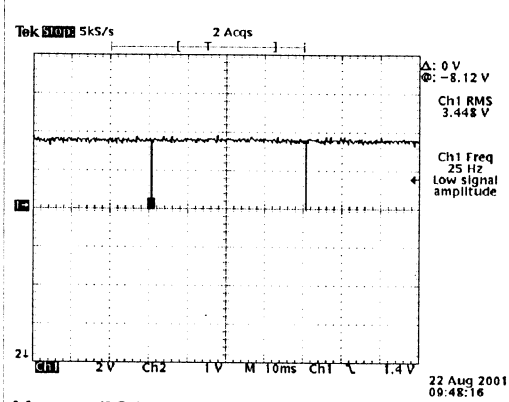
Pin	Description
1	TMDS negative differential input, channel 2
2	TMDS positive differential input, channel 2
3	Logic Ground
4	Reserved. No connection
5	Reserved. No connection
6	DDC2B Clock
7	DDC2B Data
8	Reserved. No connection
9	TMDS negative differential input, channel 1
10	TMDS positive differential input, channel 1
11	Logic Ground
12	Reserved. No connection
13	Reserved. No connection
14	Power
15	Logic Ground
16	SENSE Pin, Pull High
17	TMDS negative differential input, channel 0
18	TMDS positive differential input, channel 0
19	Logic Ground
20	Reserved. No connection
21	Reserved. No connection
22	Logic Ground
23	TMDS positive differential input, reference clock
24	TMDS negative differential input, reference clock



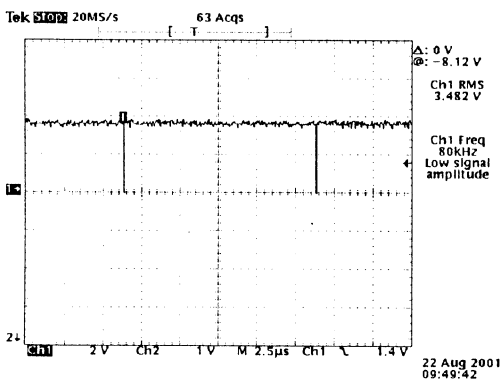
Chapter 10 Waveforms



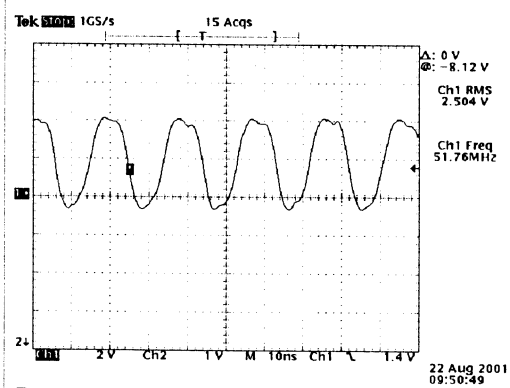
DE (IC02 pin34)



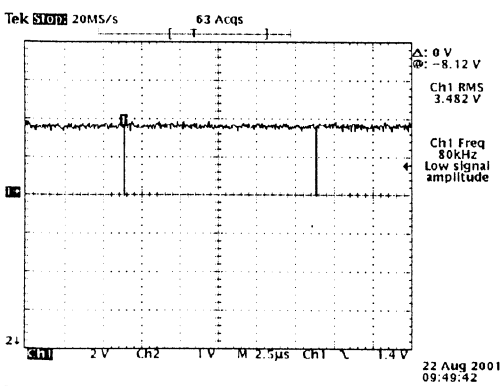
Vsync (IC02 pin32)



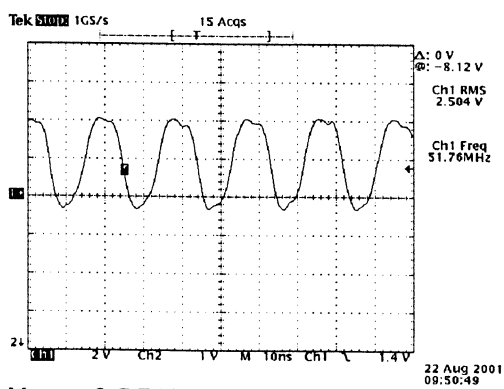
Hsync(IC02 pin31)



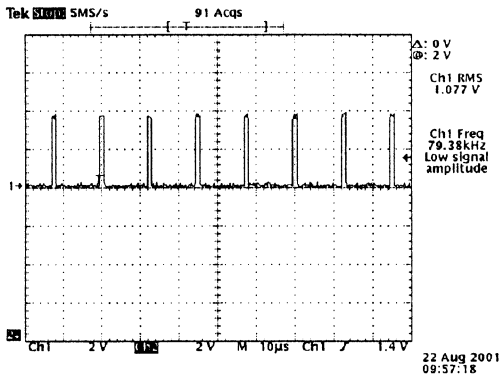
Data-clk(IC02 pin33)



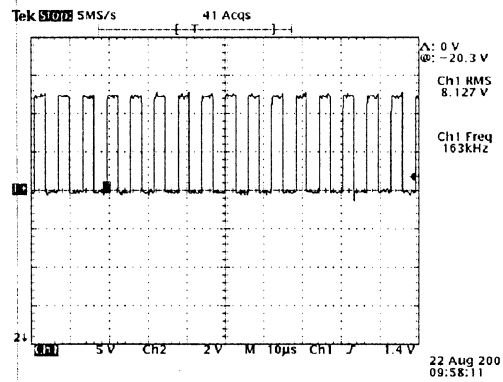
Vsync & Hsync(CH1:Vsync CH2:Hsync)



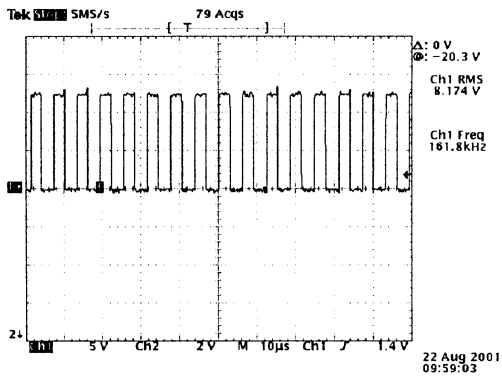
Vsync & DE(CH1:Vsync CH2:DE)



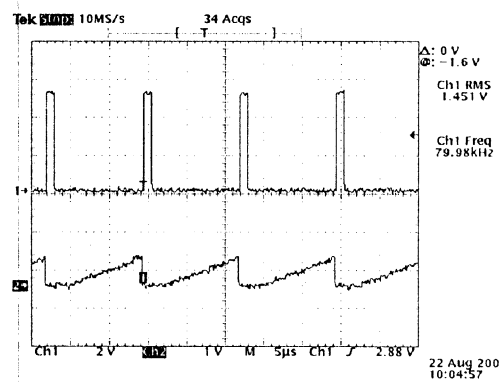
Free-run Hsync



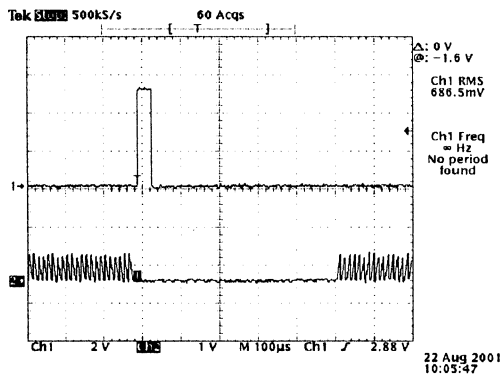
+5Vx switching power frequency(D19)



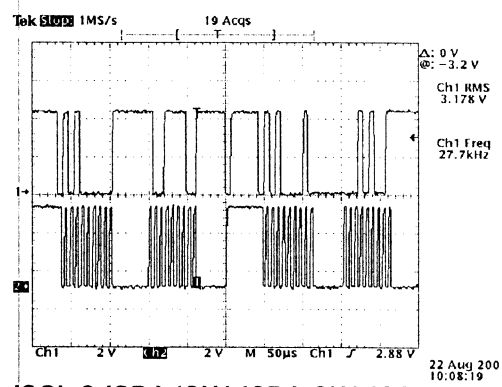
VLCD switch power frequency(D20)



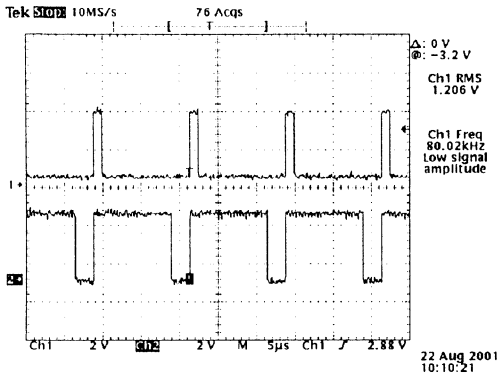
Input signal(CH1:Hsync CH2:Data)



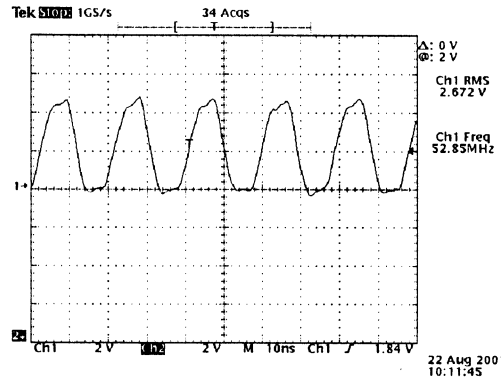
Input signal(CH1:Vsync CH2:Data)



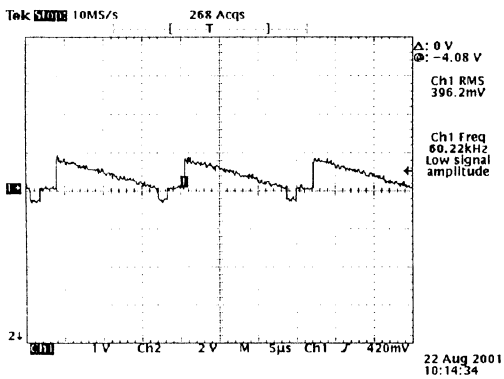
ISCL & ISDA (CH1:ISDA CH2:ISCL)



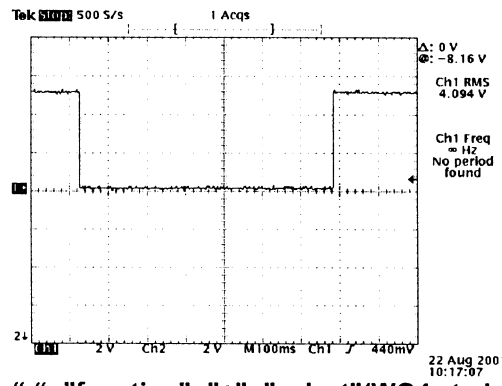
2933 PFD(CH1:IC03 pin4 CH2:IC03 pin5)



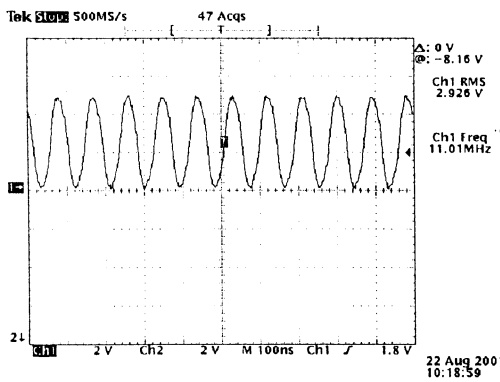
PLL output clk(IC03 pin3)



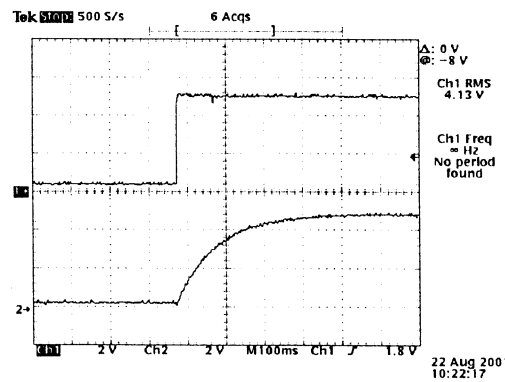
SOGIN (IC01 pin14)



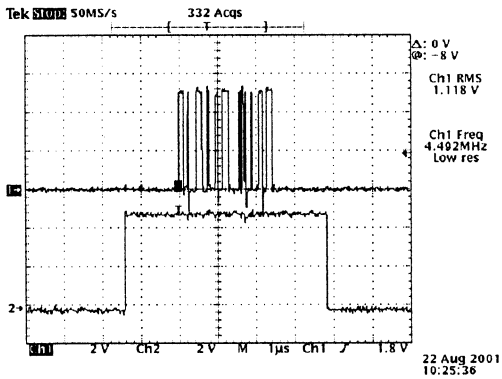
"-"; "function"; "+"; "select"(WO4 at pin1~4)



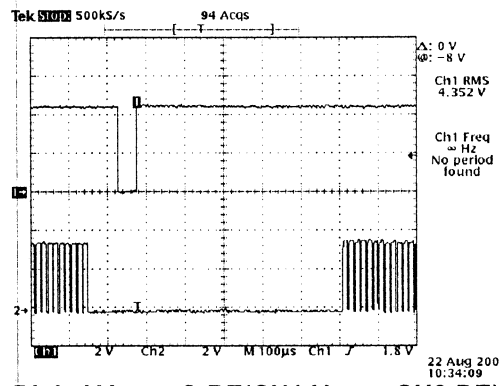
Crystal clk(IC25 pin18;19)



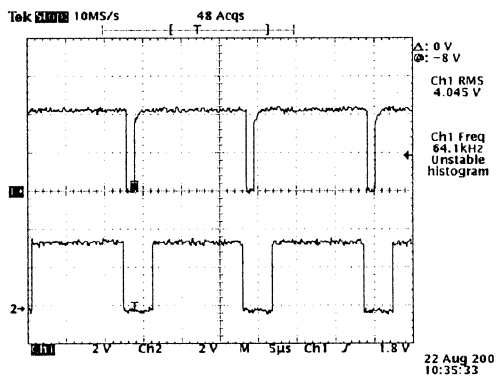
Reset signal(CH1:5Vx CH2:Q30 output pin)



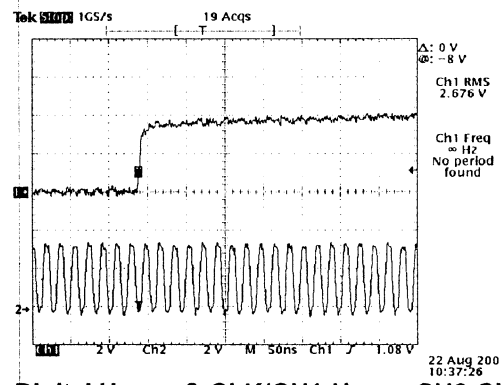
OSD Data (CH1:IC04 pin15) OSD DE(CH2:IC04 pin12)



vs. Digital Vsync & DE(CH1:Vsync CH2:DE)



Digital Hsync & DE(CH1:Hsync CH2:DE)



Digital Hsync & CLK(CH1:Hsync CH2:CLK)

Chapter 11 Spare Parts List

ITEM	LOCATION	PART NO.	DESCRIPTION	REMARK
1		0320-3400-0010	POWER CORD 6FT 220V VDE	
2		0320-1400-0030	POWER CORD 6FT 220V 5A BSI (UK) GRAY	FOR UK
3		0321-0400-0140	S.CABLE 1800mm 15(3R-3R) 3+6C/PC99 (+PIN9) 0D6	
4		0322-2400-0050	A.CABLE 3.5*2 2547#28 1800mm CORE*2 (WHITE)PC99	
5		0500-0105-0301	INVERTER DC-AC T65I008.00	
6		1701-0110-2010	FRONT PANEL (PC+ABS BAYER-71922)	
7		1701-0204-7010	REAR COVER (BAYER-71922) Belinea 101910/Maxdata	
8		1925-1000-1130	EPS FORM-L (Belinea 101910)	
9		1925-1000-1140	EPS FORM-R (Belinea 101910)	
10		1925-1200-3610	CARTON Belinea 101910/Maxdata	
11		1925-1300-3620	MANUAL Belinea 101910/Maxdata	
12		1925-1300-3630	MANUAL Belinea 101910/Maxdata for UK	FOR UK
13		3190-0032-0334	LCD BASE ASS'Y (BAYER-71922)	
14		3174-0012-0137	LCD AUDIO BD ASS'Y	
15		3190-0022-0156	LCD DISPLAY BD ASS'Y (Belinea 101910/Maxdata)	
16		3190-0092-0150	LCD MAIN BD ASS'Y Belinea 101910/Maxdata	
17	D01	0390-5000-1053	GEN. DIODE 1N4148 SMD	
18	D04	0130-0000-1859	RES. CF 0.0ohm 1/4W J 1206	
19	D11	0390-5000-1053	GEN. DIODE 1N4148 SMD	
20	D12	0390-5000-1053	GEN. DIODE 1N4148 SMD	
21	D13	0390-5000-1053	GEN. DIODE 1N4148 SMD	
22	D14	0390-5000-1053	GEN. DIODE 1N4148 SMD	
23	D15	0390-5000-1053	GEN. DIODE 1N4148 SMD	
24	D17	0390-5000-1053	GEN. DIODE 1N4148 SMD	
25	D18	0390-5000-1053	GEN. DIODE 1N4148 SMD	
26	D24	0390-5000-1053	GEN. DIODE 1N4148 SMD	
27	D41	0390-5000-1053	GEN. DIODE 1N4148 SMD	
28	IC01	0430-8000-3846	IC AD9884AKS-140 SMD 128PIN (MQFP)	
29	IC02	0430-7007-4939	IC AM121-2 SMD 160 PIN (PQFP)	
30	IC03	0430-7000-6015	IC TLC2933IPWR SMD 14PIN (TSSOP)	
31	IC04	0430-7007-7040	IC MTV118P-49 16PIN (SOP)	
32	IC07	0430-3000-4117	IC 24LC08B/P DIP 8PIN	
33	IC08	0430-6002-0007	IC LD1117S-ADJ SMD	
34	IC11	0430-7007-9738	IC SiI153BCT100 SMD 100PIN (TQFP)	
35	IC14	0430-3001-1011	IC AT24C02N-10SC-2.7 SMD 8PIN	
36	IC18	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	
37	IC19	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	
38	IC20	0430-4000-2004	IC LM339M SMD-14 T	
39	IC21	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	
40	IC22	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	
41	IC24	0430-3000-4117	IC 24LC08B/P DIP 8PIN	
42	IC25	0430-5005-7140	IC MTV112MN32 DIP 40PIN	
43	IC26	0430-3000-2017	IC MP24LC21AT/SN SMD 8PIN	
44	IC31	0430-6002-5051	IC AMC7588-ADJ SMD 3PIN (TO-252)	
45	Q01	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
46	Q02	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
47	Q03	0410-5000-2610	TRANSISTOR MMBT3906LT1 SMD	
48	Q05	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
49	Q07	0410-5000-2610	TRANSISTOR MMBT3906LT1 SMD	
50	Q09	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
51	Q11	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
52	Q12	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
53	Q13	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
54	Q14	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
55	Q16	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
56	Q19	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	
57	Q25	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	

Chapter 12 Complete Parts List

2500-2E64-0065 LCD MONITOR 19" (PC+ABS BAYER-71922) Belinea 101910

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1			3190-0032-0334	LCD BASE ASS'Y (BAYER-71922) Belinea 101910/Maxdata	1
2			3190-0122-0331	LCD PANEL ASS'Y(BAYER-71922) Belinea 101910/Maxdata	1
3			3190-0132-0312	LCD PACKING ASS'Y Belinea 101910/Maxdata	1

3190-0032-0334 LCD BASE ASS'Y (BAYER-71922) Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1			1701-0508-0000	BASE (PC+ABS BAYER-71922) Belinea 101910	1
2			1701-1000-0010	BASE FOOT (φ 18.0*1.5T)	4
3			1712-0100-2950	SWIVEL DISK BRACKET (Belinea 101910/Maxdata)	1
4			1712-0100-2960	BASE BKT ASS'Y (Belinea 101910/Maxdata)	1
5			1720-0003-0410	MAC. SCREW-MB M3.0*4.0L,Zn-Cc	1
6			1721-3003-0800	TAP. SCREW-TF #M3.0X8.0L, ZN	3
7			1947-1200-0350	SWIVEL SHEET (Belinea 101910/Maxdata)	1

3190-0122-0331 LCD PANEL ASS'Y(BAYER-71922) Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1			0211-0190-0165	LCD MODULE 19.0" TFT FLC48SXC8V (FUJITSU)	1
2			0335-1080-0350	SPEAKER 8ohm 2W 28*28mm (16CNA0281905)	2
3			0460-1004-0130	WH PH4P 1061#26 145/415mm	1
4			0460-1006-0100	WH PH6P-PH6P 1061#26 70mm	1
5			0460-1008-0110	WH PH8P-PH8P 1007#24 65mm	1
6			0460-1009-0220	WH PH9P-PH9P 1061#26 210mm	1
7			0460-3430-0140	WH FI-X30S-H/DF14-30S 1571#28 110mm + CORE*2	1
8			0500-0105-0300	INVERTER DC-AC T65I008.00	1
9			1701-0110-2010	FRONT PANEL (PC+ABS BAYER-71922) 101910	1
10			1701-0204-7010	REAR COVER ASS'Y (PC+ABS BAYER-71922)	1
11			1701-0409-0010	POWER BUTTOM (BAYER-877u) 101740/Maxdata	1
12			1701-0409-1010	FUCTION BUTTOM (BAYER-877u) 101740/Maxdata	1
13			1701-0700-0020	LENS FOR LCD	1
14			1701-0900-0260	INSULATOR SHEET (L2-170CA)	1
15			1701-1500-0030	WIRE SADDLE (CH-01C)	5
16			1701-1901-9010	REAR DOOR Belinea 101910/MAXDATA	1
17			1712-0100-2940	CHASSIS BRACKET (Belinea 101910)	1
18			1712-0100-3010	SUPPORT BKT FOR M/B Belinea 101910	1
19			1712-0500-0060	SHIELD-A FOR LCD M/B (COMP.)	1
20			1712-0500-0830	SHIELDING FOR INVERTER (Belinea 101910)	1
21			1712-0900-0410	HINGE ASS'Y-L (Belinea 101910/Maxdata)	1
22			1712-0900-0420	HINGE ASS'Y-R (Belinea 101910/Maxdata)	1
23			1720-0003-0410	MAC. SCREW-MB M3.0*4.0L,Zn-Cc	23
24			1720-0503-1210	MAC.SCREW-MBSFW M3.0*12.0L.Zn-Cc	4
25			1720-1504-1220	MAC. SCREW-MPSWF M4.0*12.0L,NI	10
26			1721-0003-1020	TAP. SCREW-TB #3.0*10.0L,NI	24
27			1721-1020-0620	TAP. SCREW-TP M2.0*6.0L,NI	8
28			1947-1200-0070	PC STRIP (80.0*15.0*0.5)	1
29			1947-1700-0020	SHIELDING AL. TAPE (45.0*25.0)	4
30			1947-1700-0130	SHIELDING AL.TAPE (70.0*50.0)	1
31			1947-1700-0900	SHIELDING AL. TAPE (90.0*25.0)	1
32			1947-1800-0030	GASKET BLOCK (10*17*60)	2
33			1947-1800-0140	SHIELDING SHEET (A50S 5020A)	1
34			1947-1800-0190	GASKET EMI (4*6.5*15mm)	1

35	1947-1800-0250	GASKET BLOCK (17*21*20mm) (773GT)	1
36	1947-1800-0290	GASKET BLOCK (12L*10W*1Hmm) HOLE 6 φ	1
37	3174-0012-0137	LCD AUDIO BD ASS'Y Belinea 101740/Maxdata	1
38	3190-0022-0156	LCD DISPLAY BD ASS'Y (Belinea 101910/Maxdata)	1
39	3190-0092-0150	LCD MAIN BD ASS'Y Belinea 101910/Maxdata	1

3190-0132-0312 LCD PACKING ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1			0300-7012-4274	AC TO DC ADAPTOR (LSE9901B1260 WHITE) PSE	1
2			0320-3400-0010	POWER CORD 6FT 220V VDE	1
3			0321-0400-0140	S.CABLE 1800mm 15(3R-3R) 3+6C/PC99 (+PIN9)	1
4			0322-2400-0050	A.CABLE 3.5 φ *2 2547#28 1800mm CORE*2 (WHITE)PC99	1
5			1701-0900-0350	TFT Protection Film Belinea	1
6			1925-1000-1130	EPS FORM-L (Belinea 101910/Maxdata)	1
7			1925-1000-1140	EPS FORM-R (Belinea 101910/Maxdata)	1
8			1925-1100-0040	PE BAG 535*490MM (RX180T)	1
9			1925-1200-3610	CARTON Belinea 101910/Maxdata	1
10			1925-1300-3620	MANUAL Belinea 101910/Maxdata	1
11			1936-1100-3730	B/C LBL Belinea101740/Belinea101910 Maxdata	1
12			1936-1400-0490	CARTON LABEL 85mm*65mm	4

3190-0022-0156 LCD DISPLAY BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1			0170-1740-0530	PCB DISPLAY BD V0 185*22*1.6T (Belinea 101910)	1
2		LED01	0440-5000-0020	LED L-59GYW 5 φ	1
3		SW1	0220-7020-0167	SW TACTILE 6*6MM 4P	1
4		SW2	0220-7020-0167	SW TACTILE 6*6MM 4P	1
5		SW3	0220-7020-0167	SW TACTILE 6*6MM 4P	1
6		SW4	0220-7020-0167	SW TACTILE 6*6MM 4P	1
7		SW5	0220-7020-0167	SW TACTILE 6*6MM 4P	1
8		W1	0451-2000-0964	WAFER 2.00MM 9P 90' KINK	1

3174-0012-0137 LCD AUDIO BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1		C01	0111-3104-5111	C/M MULTI 0.1uF 50V X7R F	1
2		C02	0111-3104-5111	C/M MULTI 0.1uF 50V X7R F	1
3		C03	0101-0470-1210	E/C GEN. 47UF 16V 105' 6.3*7mm N-F (SX TYPE)	1
4		C04	0101-0221-1210	E/C GEN. 220UF 16V 105 □ 8*9mm N-F (SX TYPE)	1
5		C05	0111-3104-5111	C/M MULTI 0.1uF 50V X7R F	1
6		C06	0111-3104-5111	C/M MULTI 0.1uF 50V X7R F	1
7		PCB01	0174-2840-0030	PCB AUDIO BD 70*25*1.6t K1 S	1
8		R01	0130-2700-1850	RES. CF 270ohm 1/8W J A	1
9		R02	0130-2000-1850	RES. CF 200ohm 1/8W J A	1
10		R03	0130-2700-1850	RES. CF 270ohm 1/8W J A	1
11		R04	0130-2000-1850	RES. CF 200ohm 1/8W J A	1
12		R05	0130-1001-1850	RES. CF 1.0Kohm 1/8W J A	1
13		R06	0130-8201-1850	RES. CF 8.2Kohm 1/8W J A	1
14		R07	0130-2702-1850	RES. CF 27Kohm 1/8W J A	1
15		R08	0130-1501-1850	RES. CF 1.5Kohm 1/8W J A	1
16		JP01	0230-5008-0000	JUMPER WIRE 5.0*0.6MM	1
17		Q01	0410-2000-1110	TRANSISTOR 2SC945P TO-92 T	1
18	CS		0410-2000-1105	TRANSISTOR 2SC1815GR TO-92 T	
19	CS		0410-2000-1106	TRANSISTOR 2SC945P TO-92 T	
20	CS		0410-2000-1109	TRANSISTOR 2SC945PTZ TO-92	
21	CS		0410-2000-1111	TRANSISTOR 2PC1815GR TO-92 T	
22	CS		0410-2000-1119	TRANSISTOR KTC945P TO-92 T	
23		U01	0430-4003-9109	IC TDA7053A DIP 16 PIN	1
24		W01	0451-2000-0664	WAFER 2.00MM 6P 90' KINK	1
25		W02	0451-2000-0464	WAFER 2.00MM 4P 90' KINK	1

3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
1		C01	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
2		C02	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
3		C04	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
4		C05	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
5		C110	0101-1331-1311	E/C GEN. 330UF 25V 105' F 8*11mm	1
6		C116	0111-3104-5111	C/M MULTI 0.1uF 50V X7R F	1
7		C118	0101-1331-1211	E/C GEN. 330UF 16V 105' F	1
8		C12	0101-1471-1311	E/C GEN. 470UF 25V 105' F	1
9		C131	0101-1471-1211	E/C GEN. 470UF 16V 105' F	1
10		C132	0101-1471-1211	E/C GEN. 470UF 16V 105' F	1
11		C134	0101-1471-1211	E/C GEN. 470UF 16V 105' F	1
12		C135	0101-1471-1211	E/C GEN. 470UF 16V 105' F	1
13		C15	0101-1331-1211	E/C GEN. 330UF 16V 105' F	1
14		C171	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
15		C172	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
16		C177	0101-1101-1211	E/C GEN. 100UF 16V 105' F	1
17		C24	0101-1331-1311	E/C GEN. 330UF 25V 105' F 8*11mm	1
18		C30	0111-3104-5111	C/M MULTI 0.1uF 50V X7R F	1
19		C40	0101-1331-1211	E/C GEN. 330UF 16V 105' F	1
20		C65	0101-1331-1211	E/C GEN. 330UF 16V 105' F	1
21		C79	0101-1331-1211	E/C GEN. 330UF 16V 105' F	1
22		C83	0101-1331-1211	E/C GEN. 330UF 16V 105' F	1
23		D115	0390-5000-4202	GEN. DIODE 1N4004F T	1
24		D116	0390-6000-1012	SCHOTTKY DIODE 11DQ06 T	1
25		D19	0390-6000-9172	SCHOTTKY DIODE SB340 T	1
26		D20	0390-6000-9172	SCHOTTKY DIODE SB340 T	1
27		F1	0182-1502-3703	PICO FUSE 125V 5A 3*7mm	1
28		JP01	0230-2508-0000	JUMPER WIRE 2.5*0.6MM	1
29		JP02	0230-2508-0000	JUMPER WIRE 2.5*0.6MM	1
30		Q10	0410-0000-2106	TRANSISTOR 2SA673AC TO-92 T	1
31	CS		0410-0000-2119	TRANSISTOR KTA200-O/Y TO-92 T	
32		Q17	0410-2000-3106	TRANSISTOR 2SC1213AC TO-92 T	1
33	CS		0410-2000-3119	TRANSISTOR KTC200-O/Y TO-92 T	
34		R202	0130-2200-1450	RES. CF 220ohm 1/4W J A	1
35		ZD04	0400-0511-2000	ZENER 5C3 5.1-5.3V 1/2W	1
36		IC02H	1712-0400-0170	HEAT SINK (27.0W*27.0D*9.0H)	1
37		IC07	0430-3000-4117	IC 24LC08B/P DIP 8PIN	1
38	CS		0430-3000-4107	IC ST24C08 DIP 8PIN	
39	CS		0430-3000-4147	IC S24C08ADP DIP 8PIN	
40	CS		0430-3000-6107	IC M24C08-BN6 DIP 8PIN	
41		IC07S	0201-2540-8000	IC SOCKET 2.54MM 8PIN	1
42		IC24	0430-3000-4117	IC 24LC08B/P DIP 8PIN	1
43	CS		0430-3000-4107	IC ST24C08 DIP 8PIN	
44	CS		0430-3000-4147	IC S24C08ADP DIP 8PIN	
45	CS		0430-3000-6107	IC M24C08-BN6 DIP 8PIN	
46		IC24S	0201-2540-8000	IC SOCKET 2.54MM 8PIN	1
47		IC25	0430-5005-7140	IC MTV112MN32 DIP 40PIN	1
48		IC25S	0201-2544-0000	IC SOCKET 2.54MM 40PIN	1
49		L01	0370-0000-1010	FERRITE CORE RH 3.5X6X1.0(W)X2	1
50		L02	0370-0000-1010	FERRITE CORE RH 3.5X6X1.0(W)X2	1

MAXDATA Service Manual
Belinea 101910

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3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
51		L07	0370-0000-1110	FERRITE CORE W8 R6H 6X10 2 1/2 T	1
52		L32	0370-0000-1110	FERRITE CORE W8 R6H 6X10 2 1/2 T	1
53		L33	0361-1000-0120	DRUM CORE L:70UH 2A(10*16)	1
54		L34	0361-1000-0120	DRUM CORE L:70UH 2A(10*16)	1
55		Q30	0430-7004-4319	IC PST994D TO-92 3PIN D=4.2V	1
56		W01	0300-1202-3150	D-SUB FEMALE 90' 15P 3ROW (PC99)	1
57		W04	0451-2000-0964	WAFER 2.00MM 9P 90' KINK	1
58		W05	0451-2000-0864	WAFER 2.00MM 8P 90' KINK	1
59		W06	0302-3010-0240	DVI CONN R/A D 24PIN (DV2R024N11)	1
60		W08	0451-2000-0664	WAFER 2.00MM 6P 90' KINK	1
61		W09	0302-1130-0043	DC POWER JACK 4P 13 φ 7.5A	1
62		W10	0302-0350-0011	PHONE JACK 3.5 φ 5PIN 90 ° +SHIELDING	1
63		XR02	0280-1100-0013	X'TAL 11.0592MHZ	1
64	CS		0280-1100-0012	X'TAL 11.0592MHZ 49/U CL:30PF	
65	CS		0280-1100-0015	X'TAL 11.0592MHZ 49/U CL:30PF	
66			0171-2242-0513	PCB MAIN BD 200*131*1.6T FR4 4M REV:03	1
67		C03	0111-3221-5106	C/M MULTI 220PF 50V NPO 0603	1
68		C06	0111-3200-5106	C/M MULTI. 20PF 50V NPO 0603	1
69		C07	0111-3200-5106	C/M MULTI. 20PF 50V NPO 0603	1
70		C10	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
71		C101	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
72		C103	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
73		C104	0111-3221-5106	C/M MULTI 220PF 50V NPO 0603	1
74		C106	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
75		C107	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
76		C108	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
77		C109	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
78		C114	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
79		C115	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
80		C117	0111-3100-5106	C/M MULTI. 10PF 50V NPO 0603	1
81		C119	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
82		C124	0111-3104-5135	C/M MULTI 0.1UF 50V Y5V 0805	1
83		C127	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
84		C129	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1

85	C130	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
86	C133	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
87	C136	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
88	C137	0101-1100-1404	E/C GEN. 10UF 35V RV2 SMD	1
89	C138	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
90	C139	0101-1100-1204	E/C GEN. 10UF 16V RV2 SMD	1
91	C14	0111-3471-5106	C/M MULTI 470PF 50V NPO 0603	1
92	C140	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
93	C141	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
94	C142	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
95	C143	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
96	C144	0101-1220-1204	E/C GEN. 22UF 16V RV2 SMD	1
97	C145	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
98	C149	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
99	C150	0111-3104-5135	C/M MULTI 0.1UF 50V Y5V 0805	1
100	C152	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1

3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
51		L07	0370-0000-1110	FERRITE CORE W8 R6H 6X10 2 1/2 T	1
52		L32	0370-0000-1110	FERRITE CORE W8 R6H 6X10 2 1/2 T	1
53		L33	0361-1000-0120	DRUM CORE L:70UH 2A(10*16)	1
54		L34	0361-1000-0120	DRUM CORE L:70UH 2A(10*16)	1
55		Q30	0430-7004-4319	IC PST994D TO-92 3PIN D=4.2V	1
56		W01	0300-1202-3150	D-SUB FEMALE 90' 15P 3ROW (PC99)	1
57		W04	0451-2000-0964	WAFER 2.00MM 9P 90' KINK	1
58		W05	0451-2000-0864	WAFER 2.00MM 8P 90' KINK	1
59		W06	0302-3010-0240	DVI CONN R/A D 24PIN (DV2R024N11)	1
60		W08	0451-2000-0664	WAFER 2.00MM 6P 90' KINK	1
61		W09	0302-1130-0043	DC POWER JACK 4P 13 φ 7.5A	1
62		W10	0302-0350-0011	PHONE JACK 3.5 φ 5PIN 90 ° +SHIELDING	1
63		XR02	0280-1100-0013	X'TAL 11.0592MHZ	1
64	CS		0280-1100-0012	X'TAL 11.0592MHZ 49/U CL:30PF	
65	CS		0280-1100-0015	X'TAL 11.0592MHZ 49/U CL:30PF	
66			0171-2242-0513	PCB MAIN BD 200*131*1.6T FR4 4M REV:03	1
67		C03	0111-3221-5106	C/M MULTI 220PF 50V NPO 0603	1
68		C06	0111-3200-5106	C/M MULTI. 20PF 50V NPO 0603	1
69		C07	0111-3200-5106	C/M MULTI. 20PF 50V NPO 0603	1
70		C10	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
71		C101	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
72		C103	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
73		C104	0111-3221-5106	C/M MULTI 220PF 50V NPO 0603	1
74		C106	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
75		C107	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
76		C108	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
77		C109	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
78		C114	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
79		C115	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
80		C117	0111-3100-5106	C/M MULTI. 10PF 50V NPO 0603	1
81		C119	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
82		C124	0111-3104-5135	C/M MULTI 0.1UF 50V Y5V 0805	1
83		C127	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
84		C129	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
85		C130	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
86		C133	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
87		C136	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
88		C137	0101-1100-1404	E/C GEN. 10UF 35V RV2 SMD	1
89		C138	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
90		C139	0101-1100-1204	E/C GEN. 10UF 16V RV2 SMD	1
91		C14	0111-3471-5106	C/M MULTI 470PF 50V NPO 0603	1
92		C140	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
93		C141	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
94		C142	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
95		C143	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
96		C144	0101-1220-1204	E/C GEN. 22UF 16V RV2 SMD	1
97		C145	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
98		C149	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
99		C150	0111-3104-5135	C/M MULTI 0.1UF 50V Y5V 0805	1
100		C152	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1

MAXDATA **Service Manual**
Belinea 101910

3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
101		C153	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
102		C154	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
103		C155	0101-1478-1504	E/C GEN. 0.47UF 50V RV2 SMD	1
104		C156	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
105		C157	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
106		C158	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
107		C159	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
108		C16	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
109		C160	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
110		C161	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
111		C162	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
112		C163	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
113		C164	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
114		C165	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
115		C166	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
116		C167	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
117		C168	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
118		C169	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
119		C17	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
120		C170	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
121		C178	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
122		C179	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
123		C18	0111-3100-5106	C/M MULTI. 10PF 50V NPO 0603	1
124		C180	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
125		C181	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
126		C182	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
127		C183	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
128		C184	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
129		C19	0101-1109-1504	E/C GEN. 1.0UF 50V RV2 SMD	1
130		C198	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
131		C199	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
132		C20	0111-3332-5116	C/M MULTI. 3300PF 50V X7R 0603	1
133		C200	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
134		C201	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
135		C202	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
136		C203	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
137		C204	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
138		C205	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
139		C206	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
140		C207	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
141		C208	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
142		C209	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
143		C21	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
144		C210	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
145		C211	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
146		C23	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
147		C25	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
148		C27	0111-3270-5106	C/M Multi. 27PF 50V NPO 0603	1
149		C31	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
150		C32	0111-3100-5106	C/M MULTI. 10PF 50V NPO 0603	1

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ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
151		C33	0111-3101-5106	C/M MULTI. 100PF 50V NPO 0603	1
152		C35	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
153		C36	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
154		C37	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
155		C38	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
156		C39	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
157		C41	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
158		C42	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
159		C43	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
160		C44	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
161		C45	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
162		C46	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
163		C47	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
164		C48	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
165		C49	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
166		C50	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
167		C51	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
168		C52	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
169		C53	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
170		C54	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
171		C55	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
172		C56	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
173		C57	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
174		C58	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
175		C59	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
176		C60	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
177		C61	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
178		C62	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
179		C63	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
180		C64	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
181		C66	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
182		C67	0111-3471-5106	C/M MULTI 470PF 50V NPO 0603	1
183		C69	0101-1470-1104	E/C GEN. 47UF 10V RV2 SMD	1
184		C70	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1

185		C71	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
186		C72	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
187		C73	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
188		C74	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
189		C78	0111-3103-5116	C/M MULTI 0.01UF 50V X7R 0603	1
190		C80	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
191		C81	0111-3393-1616	C/M MULTI 0.039UF 16V X7R (0603)	1
192		C82	0111-3392-5116	C/M MULTI 3900PF 50V X7R 0603	1
193		C84	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
194		C85	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
195		C86	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
196		C89	0111-3221-5106	C/M MULTI 220PF 50V NPO 0603	1
197		C91	0111-3200-5106	C/M MULTI. 20PF 50V NPO 0603	1
198		C92	0111-3200-5106	C/M MULTI. 20PF 50V NPO 0603	1
199		C93	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
200		C94	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1

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ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
201		C95	0111-3104-2536	C/M MULTI. 0.1UF 25V Y5V 0603	1
202		C96	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
203		C97	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
204		C98	0111-3220-5106	C/M MULTI. 22PF 50V NPO 0603	1
205		C99	0111-3470-5106	C/M MULTI. 47PF 50V NPO 0603	1
206		D01	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
207	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
208	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
209		D02	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
210		D04	0130-0000-1859	RES. CF 0.0ohm 1/4W J 1206	1
211		D05	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
212		D06	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
213		D07	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
214		D08	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
215		D09	0390-5001-8293	DUAL SURFACE DIODES BAV70 SMD (SOT-23)	1
216		D10	0130-4708-1859	RES. CF 4.7ohm 1/4W J 1206	1
217		D11	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
218	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
219	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
220		D12	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
221	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
222	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
223		D13	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
224	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
225	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
226		D14	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
227	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
228	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
229		D15	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
230	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
231	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
232		D17	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
233	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
234	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
235		D18	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
236	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
237	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
238		D24	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
239	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
240	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
241		D26	0390-5001-8293	DUAL SURFACE DIODES BAV70 SMD (SOT-23)	1
242		D27	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
243		D28	0390-5001-9293	DUAL SURFACE DIODES BAV99 SMD (SOT-23)	1
244		D41	0390-5000-1053	GEN. DIODE 1N4148 SMD	1
245	CS		0390-5000-1093	GEN. DIODE FDLL4148 SMD	
246	CS		0390-5000-1223	GEN. DIODE RLS4148 SMD	
247		IC01	0430-8000-3846	IC AD9884AKS-140 SMD 128PIN (MQFP)	1
248		IC02	0430-7007-4939	IC AM121-2 SMD 160 PIN (PQFP)	1
249		IC03	0430-7000-6015	IC TLC2933IPWR SMD 14PIN (TSSOP)	1
250		IC04	0430-7007-7040	IC MTV118P-49 16PIN (SOP)	1

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ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
251		IC06	0430-1004-1035	IC 74F153SC SMD 16PIN (SOIC)	1
252		IC08	0430-6002-0007	IC LD1117S-ADJ SMD	1
253		IC09	0430-1003-3635	IC 74LCX245MTCX SMD 20PIN (TSSOP)	1
254		IC11	0430-7007-9738	IC Sil153BCT100 SMD 100PIN (TQFP)	1
255		IC12	0430-0000-6004	IC CD4049UBM SMD 16PIN	1
256		IC14	0430-3001-1011	IC AT24C02N-10SC-2.7 SMD 8PIN	1
257		IC15	0430-1003-0035	IC DM74LS14MX SMD 14PIN	1
258		IC16	0430-0000-8035	IC MM74HC4053WMX SMD 16PIN	1
259		IC17	0430-1004-0635	IC DM74LS86 SMD 14PIN (TSSOP)	1
260		IC18	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	1
261		IC19	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	1
262		IC20	0430-4000-2004	IC LM339M SMD-14 T	1
263	CS		0430-4000-2006	IC LM339N SMD-14	
264	CS		0430-4000-2007	IC LM339D SMD-14 T PIN	
265	CS		0430-4000-2010	IC LM339N SMD-14 T	
266		IC21	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	1
267		IC22	0420-1001-3601	POWER MOS IRF7304 SMD 8PIN	1
268		IC23	0430-1000-7035	IC 74HC14 SMD 14PIN	1
269		IC26	0430-3000-2017	IC MP24LC21AT/SN SMD 8PIN	1
270	CS		0430-3000-2011	IC AT24C21-10SC SMD-8	
271		IC27	0430-1000-8035	IC MM74HC74AMX SMD 14PIN	1
272		IC28	0430-1000-7035	IC 74HC14 SMD 14PIN	1
273		IC29	0430-1003-8635	IC MM74HC08 SMD 14PIN (SOIC)	1
274		IC31	0430-6002-5051	IC AMC7588-ADJ SMD 3PIN (TO-252)	1
275		IC36	0430-7003-7650	IC THC63LVDM83A SMD 56PIN (TSSOP)	1
276	SS		0430-8001-6640	IC CS5828 SMD 56PIN (TSSOP)	
277		IC37	0430-7003-7650	IC THC63LVDM83A SMD 56PIN (TSSOP)	1
278	SS		0430-8001-6640	IC CS5828 SMD 56PIN (TSSOP)	
279		L03	0130-2208-1858	RES. CF 2.2ohm 1/8W J 0805	1
280		L04	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
281		L05	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
282		L06	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
283		L08	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
284		L09	0130-1000-1858	RES. CF 100ohm 1/8W J 0805	1

285	L11	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
286	L16	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
287	L160	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
288	L161	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
289	L20	0370-0000-3552	CHIP BEAD CORE 30ohm MLB-201209-0030A-N1	1
290	L21	0370-0000-3552	CHIP BEAD CORE 30ohm MLB-201209-0030A-N1	1
291	L22	0370-0000-3552	CHIP BEAD CORE 30ohm MLB-201209-0030A-N1	1
292	L23	0370-0000-5842	CHIP BEAD CORE 40ohm (ACB2012M-040)	1
293	L24	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
294	L25	0370-0000-5942	CHIP BEAD CORE 60ohm (ACB2012L-060)	1
295	L26	0370-0000-5842	CHIP BEAD CORE 40ohm (ACB2012M-040)	1
296	L35	0344-6880-0603	PEAKING COIL 0.68UH 1/4W K 2012	1
297	PRA01	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
298	PRA02	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
299	PRA05	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
300	PRA06	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1

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ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
301		PRA09	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
302		PRA10	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
303		PRA17	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
304		PRA18	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
305		PRA21	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
306		PRA22	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
307		PRA25	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
308		PRA26	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
309		PRB03	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
310		PRB04	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
311		PRB07	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
312		PRB08	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
313		PRB11	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
314		PRB12	0370-0010-0161	ARRAY BEAD 120ohm (FCA3216M4-121TO2)	1
315		PR13	0141-4700-3851	ARRAY RES. A(X) 470ohm 4R J 8P	1
316		PR14	0141-1002-3851	ARRAY RES. A(X) 10Kohm 4R J 8P	1
317		PR27	0141-1002-3851	ARRAY RES. A(X) 10Kohm 4R J 8P	1
318		PR28	0141-1002-3851	ARRAY RES. A(X) 10Kohm 4R J 8P	1
319		PR29	0141-1002-3851	ARRAY RES. A(X) 10Kohm 4R J 8P	1
320		PR30	0141-1009-3851	ARRAY RES. A(X) 10ohm 4R J 8P	1
321		PR31	0141-1002-3851	ARRAY RES. A(X) 10Kohm 4R J 8P	1
322		PR32	0141-1002-3851	ARRAY RES. A(X) 10Kohm 4R J 8P	1
323		PR51	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
324		PR52	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
325		PR53	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
326		PR54	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
327		PR55	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
328		PR56	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
329		PR57	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
330		PR58	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
331		PR59	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
332		PR60	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
333		PR61	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1
334		PR62	0141-4709-3851	ARRAY RES. A(X) 47ohm 4R J 8P	1

335		Q01	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
336	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
337		Q02	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
338	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
339		Q03	0410-5000-2610	TRANSISTOR MMBT3906LT1 SMD	1
340	CS		0410-5000-2604	TRANSISTOR MMBT3906 SMD (SOT-23)	
341		Q05	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
342	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
343		Q07	0410-5000-2610	TRANSISTOR MMBT3906LT1 SMD	1
344	CS		0410-5000-2604	TRANSISTOR MMBT3906 SMD (SOT-23)	
345		Q09	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
346	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
347		Q11	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
348	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
349		Q12	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
350	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	

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ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
351		Q13	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
352	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
353		Q14	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
354	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
355		Q16	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
356	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
357		Q18	0410-1000-3620	TRANSISTOR 2SB0766A SMD	1
358		Q19	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
359	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
360		Q25	0410-5000-1610	TRANSISTOR MMBT3904LT1 SMD T	1
361	CS		0410-5000-1604	TRANSISTOR 2N3904 SMD T	
362		R02	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
363		R05	0130-7500-0055	RES. CF 750ohm 1/10W J 0603	1
364		R06	0130-5100-0055	RES. CF 510ohm 1/10W J 0603	1
365		R07	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
366		R08	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
367		R09	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
368		R10	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
369		R100	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
370		R101	0130-9109-0055	RES. CF 91ohm 1/10W J 0603	1
371		R102	0130-4700-0055	RES. CF 470ohm 1/10W J 0603	1
372		R103	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
373		R104	0130-4302-0055	RES. CF 43Kohm 1/10W J 0603	1
374		R105	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
375		R106	0130-2202-0055	RES. CF 22Kohm 1/10W J 0603	1
376		R107	0130-2201-0055	RES. CF 2.2Kohm 1/10W J 0603	1
377		R108	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
378		R109	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
379		R11	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
380		R110	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
381		R111	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
382		R112	0130-4302-0055	RES. CF 43Kohm 1/10W J 0603	1
383		R113	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
384		R114	0130-3301-0055	RES. CF 3.3Kohm 1/10W J 0603	1

385	R115	0130-3301-0055	RES. CF 3.3Kohm 1/10W J 0603	1
386	R116	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
387	R119	0130-2201-0055	RES. CF 2.2Kohm 1/10W J 0603	1
388	R12	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
389	R121	0130-2700-0055	RES. CF 270ohm 1/10W J 0603	1
390	R122	0130-2700-0055	RES. CF 270ohm 1/10W J 0603	1
391	R123	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
392	R124	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
393	R125	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
394	R126	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
395	R127	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
396	R128	0130-2700-0055	RES. CF 270ohm 1/10W J 0603	1
397	R130	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
398	R132	0130-3301-0055	RES. CF 3.3Kohm 1/10W J 0603	1
399	R133	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
400	R135	0130-1000-0055	RES. CF 100ohm 1/10W J 0603	1

3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
401		R138	0130-1002-1859	RES. CF 10Kohm 1/4W J 1206	1
402		R14	0130-1500-1858	RES. CF 150ohm 1/8W J 0805	1
403		R140	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
404		R142	0130-3901-0055	RES. CF 3.9Kohm 1/10W J 0603	1
405		R143	0130-2401-0055	RES. CF 2.4Kohm 1/10W J 0603	1
406		R144	0130-3301-0055	RES. CF 3.3Kohm 1/10W J 0603	1
407		R145	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
408		R146	0130-2200-0055	RES. CF 220ohm 1/10W J 0603	1
409		R148	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
410		R149	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
411		R150	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
412		R151	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1
413		R152	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1
414		R154	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
415		R157	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
416		R158	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
417		R159	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
418		R16	0130-1500-1858	RES. CF 150ohm 1/8W J 0805	1
419		R160	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
420		R161	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
421		R162	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
422		R163	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
423		R164	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
424		R165	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
425		R166	0130-1009-0055	RES. CF 10ohm 1/10W J 0603	1
426		R167	0130-2208-0055	RES. CF 2.2ohm 1/10W J 0603	1
427		R168	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
428		R169	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
429		R17	0130-1500-1858	RES. CF 150ohm 1/8W J 0805	1
430		R170	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
431		R171	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
432		R172	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
433		R173	0130-1000-0055	RES. CF 100ohm 1/10W J 0603	1
434		R174	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1

435		R175	0130-2208-0055	RES. CF 2.2ohm 1/10W J 0603	1
436		R176	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
437		R178	0130-0000-1858	RES. CF 0.0ohm 1/8W J 0805	1
438		R18	0130-2202-0055	RES. CF 22Kohm 1/10W J 0603	1
439		R180	0130-3300-0055	RES. CF 330ohm 1/10W J 0603	1
440		R182	0130-3301-0055	RES. CF 3.3Kohm 1/10W J 0603	1
441		R183	0130-5609-0055	RES. CF 56ohm1/10W J 0603	1
442		R184	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
443		R185	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
444		R187	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
445		R189	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
446		R19	0130-1000-0055	RES. CF 100ohm 1/10W J 0603	1
447		R190	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
448		R192	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
449		R194	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
450		R196	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1

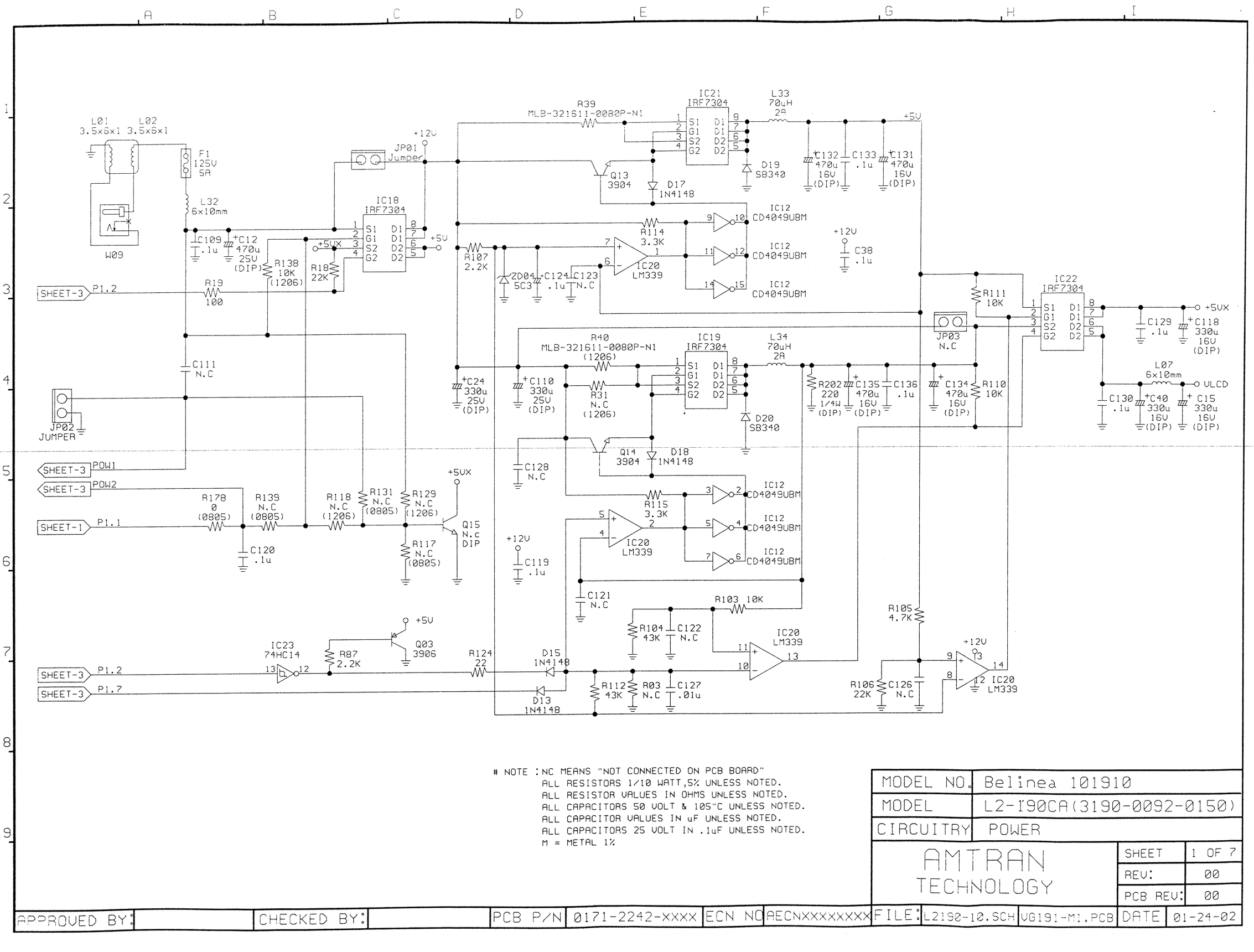
3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
451		R197	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
452		R198	0130-2200-0055	RES. CF 220ohm 1/10W J 0603	1
453		R199	0130-1200-0055	RES. CF 120ohm 1/10W J 0603	1
454		R201	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
455		R205	0130-2001-0055	RES. CF 2Kohm 1/10W J 0603	1
456		R21	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
457		R23	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
458		R24	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
459		R29	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
460		R30	0131-0000-0015	RES. MF 0.0ohm 1/10W F 0603	1
461		R32	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
462		R33	0130-2703-0055	RES. CF 270Kohm 1/10W J 0603	1
463		R34	0130-4700-0055	RES. CF 470ohm 1/10W J 0603	1
464		R35	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
465		R36	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
466		R38	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
467		R39	0370-0000-4651	CHIP BEAD CORE 80ohm (MLB-321611-0080P-N1)	1
468		R40	0370-0000-4651	CHIP BEAD CORE 80ohm (MLB-321611-0080P-N1)	1
469		R41	0130-1500-1858	RES. CF 150ohm 1/8W J 0805	1
470		R42	0130-1500-1858	RES. CF 150ohm 1/8W J 0805	1
471		R43	0130-1500-1858	RES. CF 150ohm 1/8W J 0805	1
472		R44	0130-5100-0055	RES. CF 510ohm 1/10W J 0603	1
473		R45	0130-1000-0055	RES. CF 100ohm 1/10W J 0603	1
474		R46	0130-4700-0055	RES. CF 470ohm 1/10W J 0603	1
475		R47	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
476		R48	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
477		R49	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
478		R50	0130-3001-0055	RES. CF 3.0Kohm 1/10W J 0603	1
479		R52	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
480		R54	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
481		R55	0130-2002-0055	RES. CF 20Kohm 1/10W J 0603	1
482		R56	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
483		R57	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
484		R59	0130-0000-0055	RES. CF 0.0ohm 1/10W J 0603	1
485		R60	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
486		R64	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1
487		R65	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1
488		R66	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
489		R68	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
490		R69	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
491		R70	0130-4709-0055	RES. CF 47ohm 1/10W J 0603	1
492		R71	0130-1003-0055	RES. CF 100Kohm 1/10W J 0603	1
493		R72	0370-0000-2143	CHIP BEAD CORE 600ohm 1608M T	1
494		R73	0370-0000-2143	CHIP BEAD CORE 600ohm 1608M T	1
495		R74	0130-3303-0055	RES. CF 330Kohm 1/10W J 0603	1
496		R75	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
497		R76	0130-2201-0055	RES. CF 2.2Kohm 1/10W J 0603	1
498		R77	0130-2201-0055	RES. CF 2.2Kohm 1/10W J 0603	1
499		R79	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
500		R80	0130-1500-0055	RES. CF 150ohm 1/10W J 0603	1

MAXDATA Service Manual
Belinea 101910

3190-0092-0150 LCD MAIN BD ASS'Y Belinea 101910 / Maxdata

ITEM	M/S	LOCATION	PART NO.	DESCRIPTION	Q'TY
501		R82	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
502		R84	0130-2700-0055	RES. CF 270ohm 1/10W J 0603	1
503		R86	0130-2209-0055	RES. CF 22ohm 1/10W J 0603	1
504		R87	0130-2201-0055	RES. CF 2.2Kohm 1/10W J 0603	1
505		R88	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
506		R89	0130-2202-0055	RES. CF 22Kohm 1/10W J 0603	1
507		R90	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
508		R91	0130-7500-1859	RES. CF 750ohm 1/4W J 1206	1
509		R93	0130-7500-1859	RES. CF 750ohm 1/4W J 1206	1
510		R94	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
511		R95	0130-1001-0055	RES. CF 1.0Kohm 1/10W J 0603	1
512		R96	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
513		R97	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
514		R98	0130-1002-0055	RES. CF 10Kohm 1/10W J 0603	1
515		R99	0130-4701-0055	RES. CF 4.7Kohm 1/10W J 0603	1
516		W07	0302-2000-0301	CONN MALE R/A 30P SMD (DF14-30P-1.25H(20	1



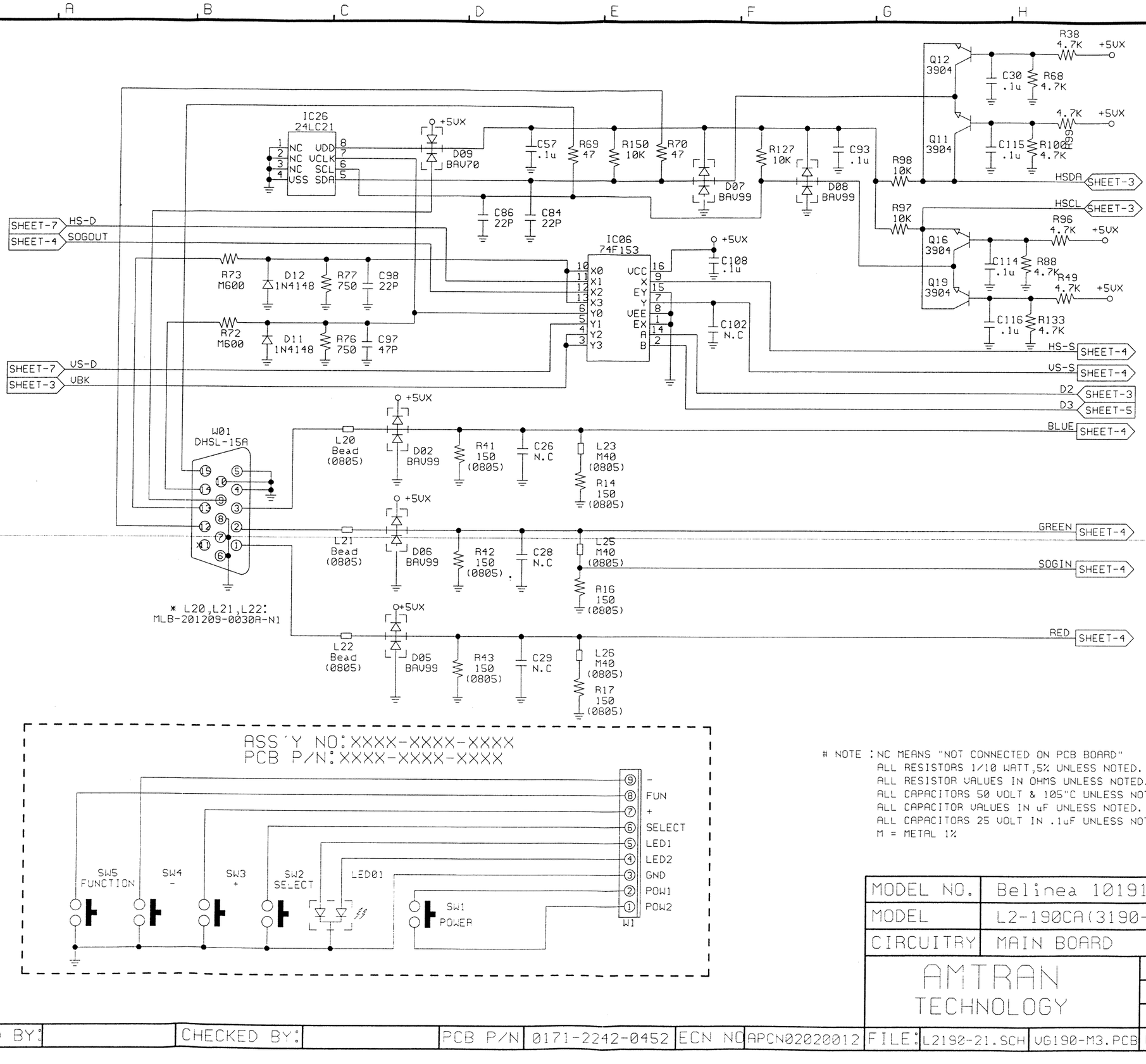
NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/10 WATT,5% UNLESS NOTED.
ALL RESISTOR VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL CAPACITORS 25 VOLT IN .1uF UNLESS NOTED.
M = METAL 1%

MODEL NO.	Belinea 101910
MODEL	L2-190CA(3190-0092-0150)
CIRCUITRY	POWER

AMTRAN TECHNOLOGY

SHEET	1 OF 7
REV:	00
PCB REV:	00

APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-XXXX	ECN NO	AECNXXXXXXXX	FILE:	L2190-10.SCH	VG191-M1.PCB	DATE 01-24-02



NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
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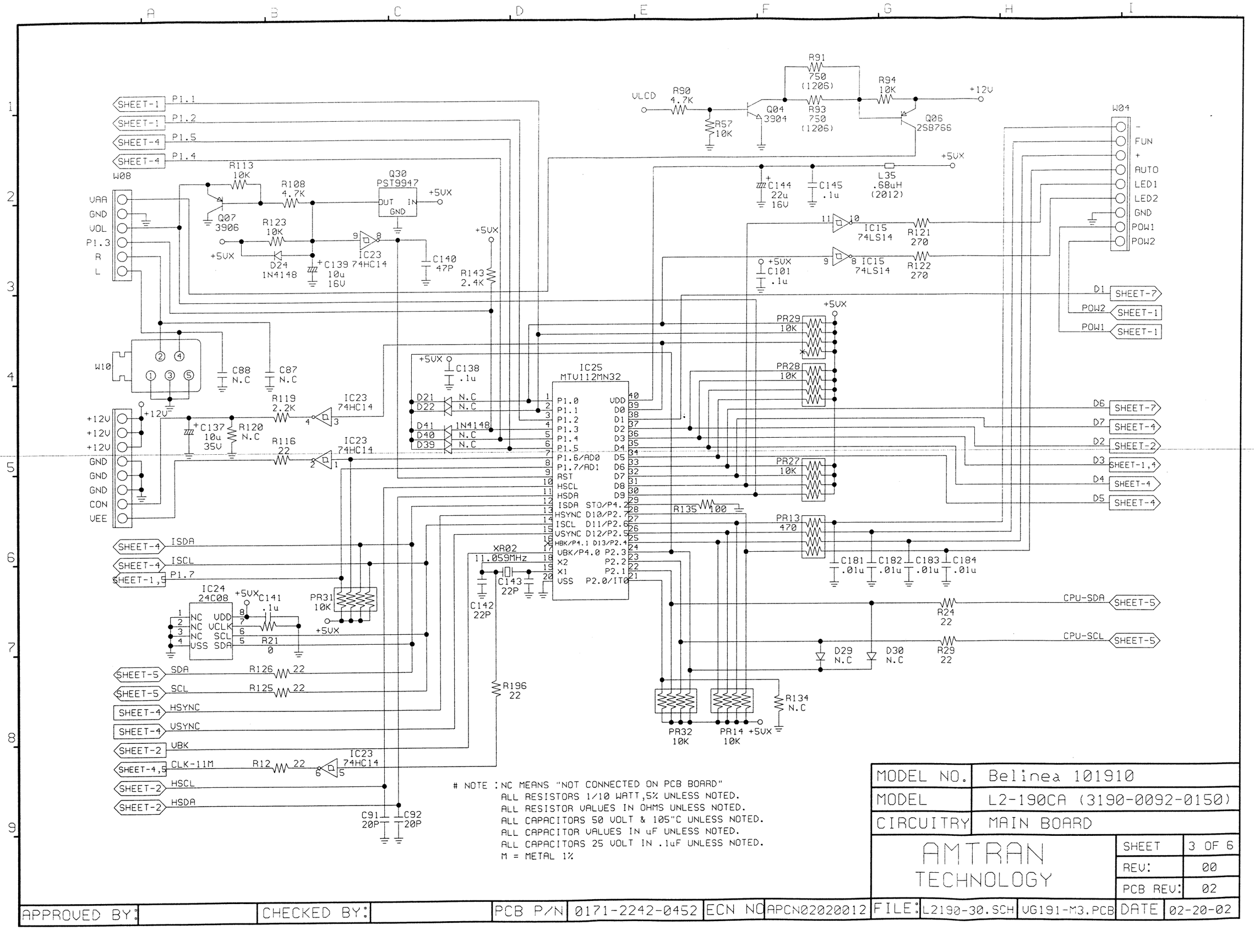
ALL RESISTOR VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL CAPACITORS 25 VOLT IN .1uF UNLESS NOTED.
M = METAL 1%

MODEL NO.	Belinea 101910
MODEL	L2-190CA(3190-0092-0152)
CIRCUITRY	MAIN BOARD

AMTRAN TECHNOLOGY

SHEET	2 OF 7
REV:	21
PCB REV:	22

APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-0452	ECN NO	APCN02020012	FILE:	L2190-21.SCH	VG190-M3.PCB	DATE 02-20-02



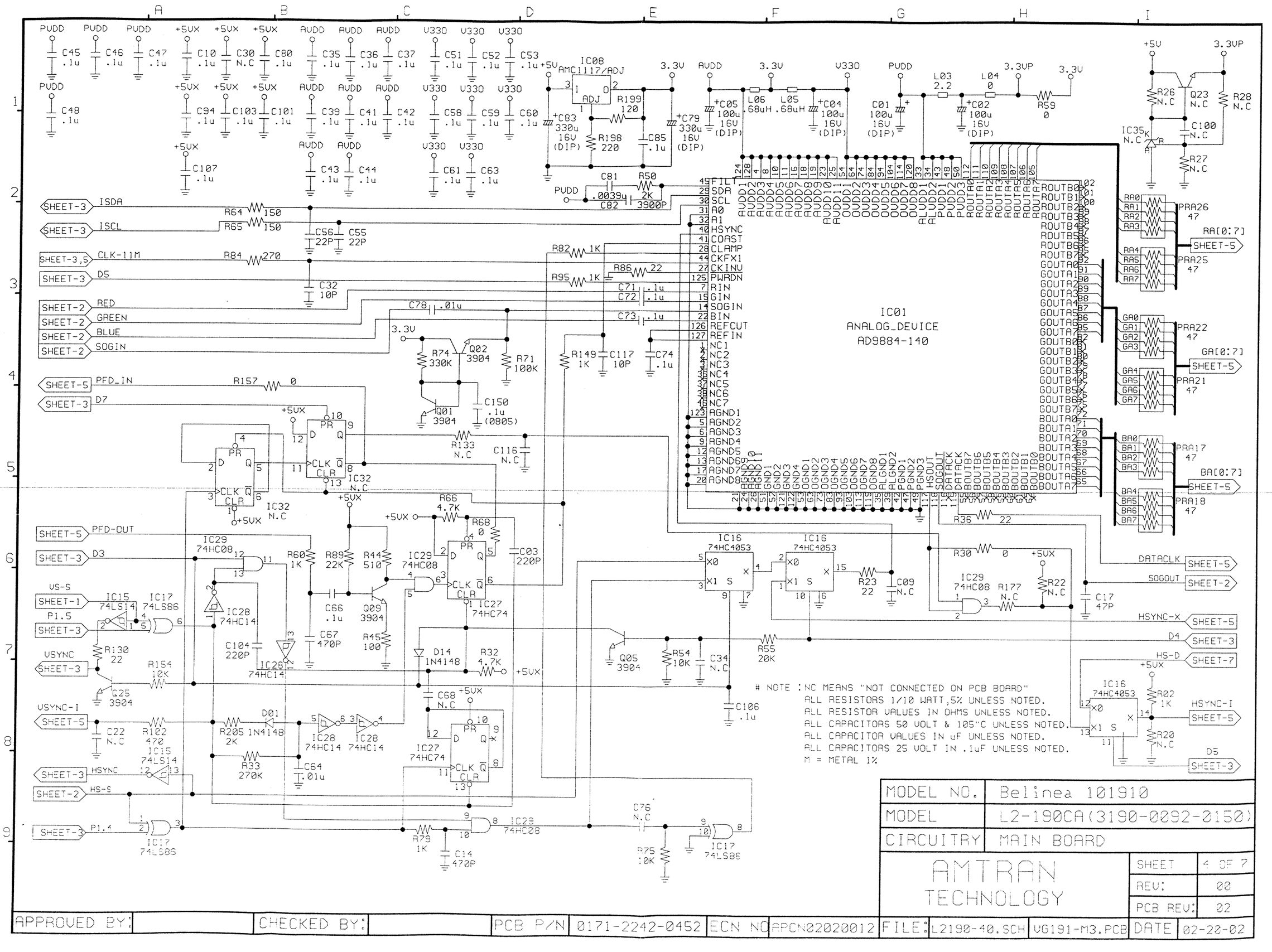
NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/10 WATT,5% UNLESS NOTED.
ALL RESISTOR VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL CAPACITORS 25 VOLT IN .1uF UNLESS NOTED.
M = METAL 1%

MODEL NO.	Belinea 101910
MODEL	L2-190CA (3190-0092-0150)
CIRCUITRY	MAIN BOARD

AMTRAN TECHNOLOGY

SHEET	3 OF 6
REV:	00
PCB REV:	02

APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-0452	ECN NO	APCN02020012	FILE:	L2190-30.SCH	VG191-M3.PCB	DATE	02-20-02

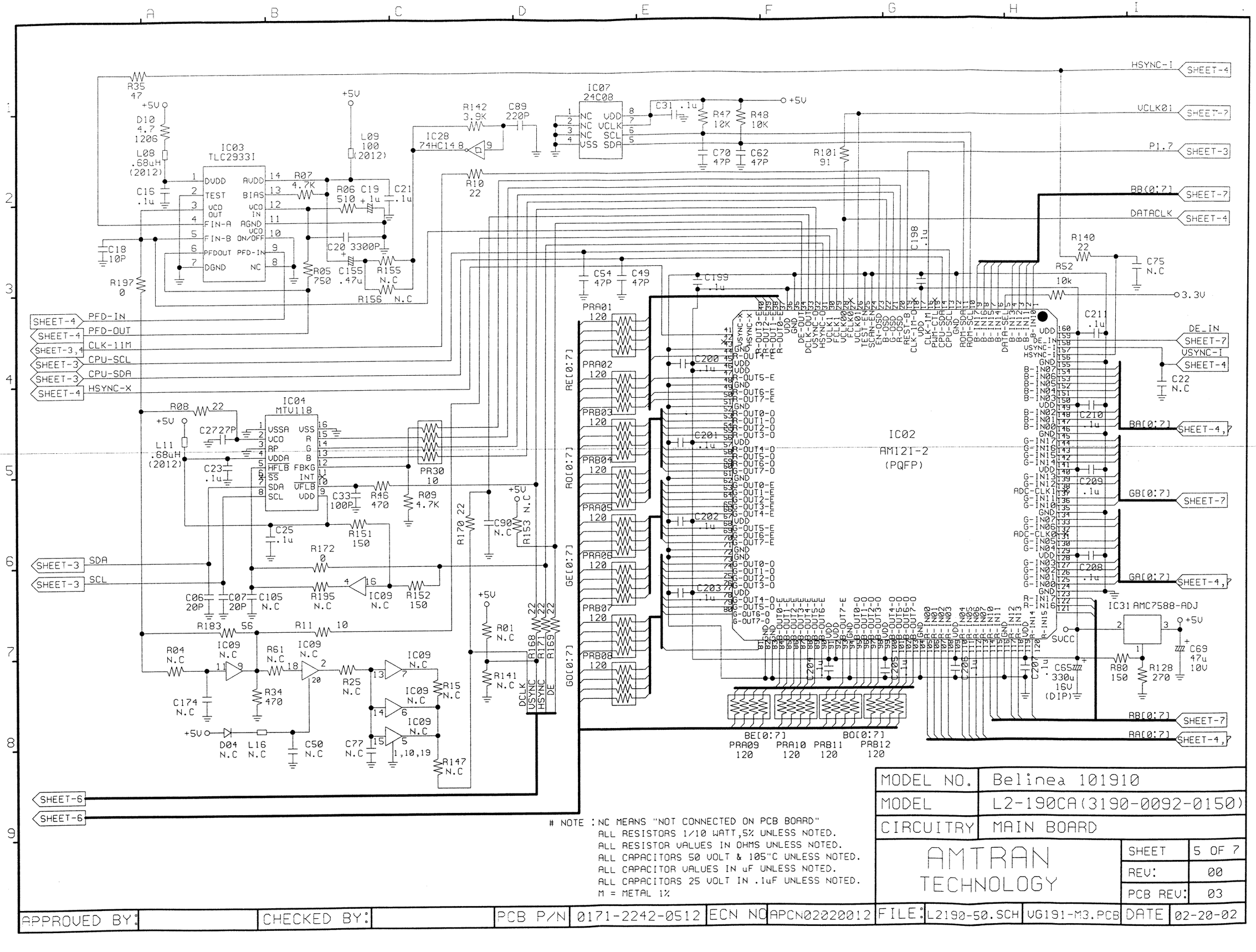


APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-0452	ECN NO	APCN02020012	FILE: L2190-40.SCH	VG191-M3.PCB

MODEL NO.	Belinea 101910
MODEL	L2-190CA(3190-0092-0150)
CIRCUITRY	MAIN BOARD

AMTRAN TECHNOLOGY

SHEET	4 OF 7
REV:	00
PCB REV:	02
DATE	02-22-02



NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/10 WATT,5% UNLESS NOTED.
ALL RESISTOR VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL CAPACITORS 25 VOLT IN .1uF UNLESS NOTED.
M = METAL 1%

MODEL NO.	Belinea 101910
MODEL	L2-190CA(3190-0092-0150)
CIRCUITRY	MAIN BOARD

AMTRAN TECHNOLOGY

SHEET	5 OF 7
REV:	00
PCB REV:	03

APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-0512	ECN NO	APCN02020012	FILE:	L2190-50.SCH	VG191-M3.PCB	DATE	02-20-02

NOTE : NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/10 WATT,5% UNLESS NOTED.
ALL RESISTOR VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL CAPACITORS 25 VOLT IN .1uF UNLESS NOTED.
M = METAL 1%

IC36 THC63LVD83

C154 .1u
C159 .1u
C160 .1u
C149 .1u
C153 .1u
C152 .1u
R181 N.C
R144 3.3K
R182 3.3K
R201 0
R148 10 DCLK DE
R174 0
L24 .68u (2021)
C177 100u 16V (DIP)

SHEET5
SHEET-5 HSYNC
SHEET-5 VSYNC
SHEET5 SVCC
LLVCC
VLCD

1	VCC	TXIN4	56	RO4			
RO7	2	TXIN5	TXIN3	55	RO3		
RO5	3	TXIN6	TXIN2	54	RO2		
GO0	4	TXIN7	GND	53			
5	GND	TXIN1	52	RO1			
GO1	6	TXIN8	TXIN0	51	RO0		
GO2	7	TXIN9	TXIN27	50	RO6		
GO6	8	TXIN10	LVDS_GND	49			
9	VCC	TXOUT0-	48	TXO0-			
GO7	10	TXIN11	TXOUT0+	47	TXO0+		
GO3	11	TXIN12	TXOUT1-	46	TXO1-		
GO4	12	TXIN13	TXOUT1+	45	TXO1+		
13	GND	LVDS_VCC	44				
GO5	14	TXIN14	LVDS_GND	43	LLVCC		
BO0	15	TXIN15	TXOUT2-	42	TXO2-		
BO6	16	TXIN16	TXOUT2+	41	TXO2+		
17	CLKSEL	CLK_OUT-	40	TXOCK-			
BO7	18	TXIN17	CLK_OUT+	39	TXOCK+		
BO1	19	TXIN18	TXOUT3-	38	TXO3-		
BO2	20	TXIN19	TXOUT3+	37	TXO3+		
21	GND	LVDS_GND	36				
BO3	22	TXIN20	PLL_GND	35			
BO4	23	TXIN21	PLL_VCC	34			
BO5	24	TXIN22	PLL_GND	33			
25	TXIN23	PWR_DWN	32				
26	VCC	TXCLKIN	31				
27	TXIN24	TXIN26	30				
28	TXIN25	GND	29				

W07

30	VLCD
29	VLCD
28	VLCD
27	GND
26	TXO0-
25	TXO0+
24	TXO1-
23	TXO1+
22	GND
21	TXO2-
20	TXO2+
19	TXOCK-
18	TXOCK+
17	GND
16	TXO3-
15	TXO3+
14	TXE0-
13	TXE0+
12	GND
11	TXE1-
10	TXE1+
9	TXE2-
8	TXE2+
7	GND
6	TXECK-
5	TXECK+
4	TXE3-
3	TXE3+
2	GND
1	GND

IC37 THC63LVD83

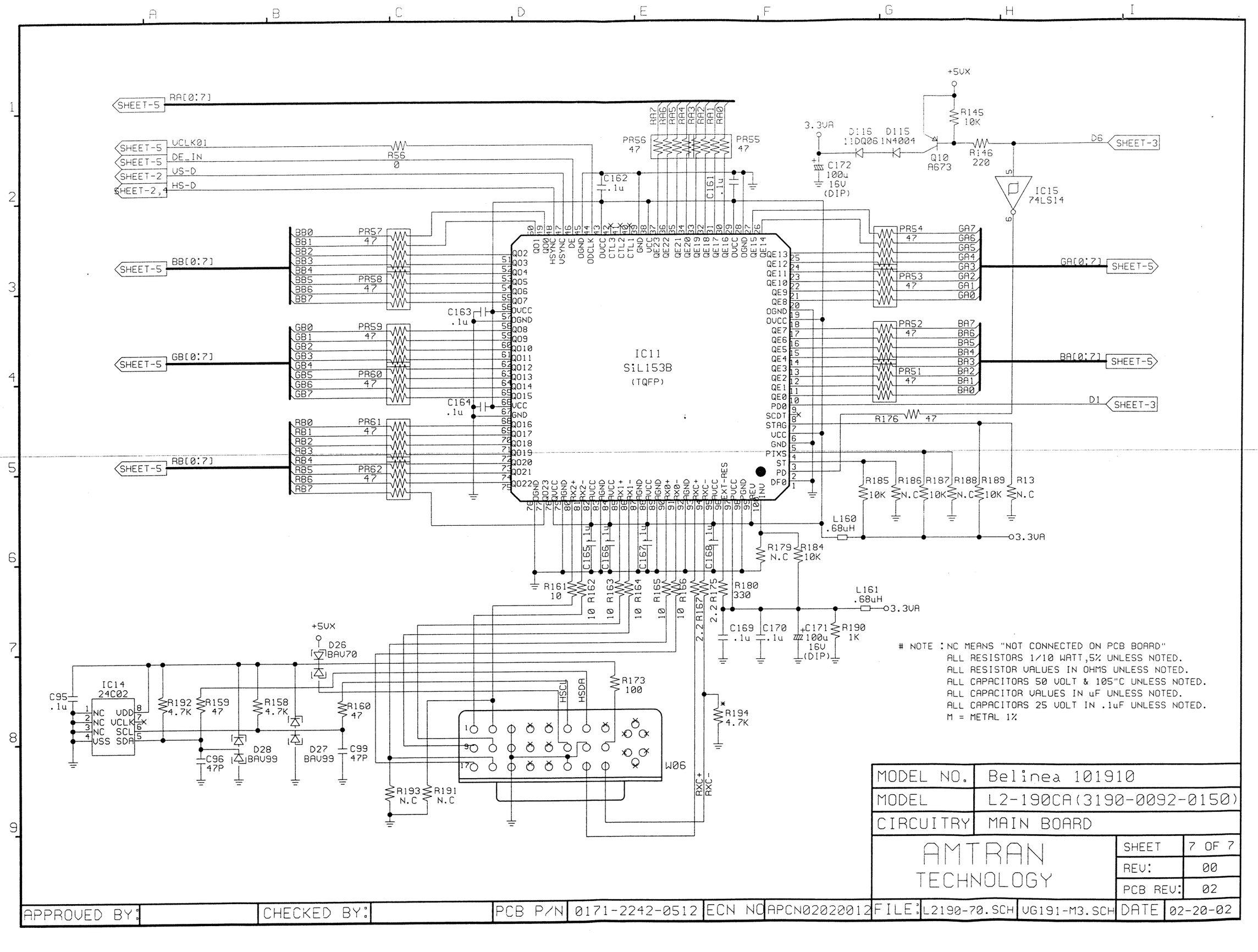
C178 .1u
C179 .1u
C180 .1u
R132 3.3K
R137 N.C
R136 N.C
C173 N.C
C158 .1u
C157 .1u
C156 .1u
R109 10

SHEET-5 DE
SHEET-5 DCLK

1	VCC	TXIN4	56	RE4			
RE7	2	TXIN5	TXIN3	55	RE3		
RE5	3	TXIN6	TXIN2	54	RE2		
GE0	4	TXIN7	GND	53			
5	GND	TXIN1	52	RE1			
GE1	6	TXIN8	TXIN0	51	RE0		
GE2	7	TXIN9	TXIN27	50	RE6		
GE6	8	TXIN10	LVDS_GND	49			
9	VCC	TXOUT0-	48	TXE0-			
GE7	10	TXIN11	TXOUT0+	47	TXE0+		
GE3	11	TXIN12	TXOUT1-	46	TXE1-		
GE4	12	TXIN13	TXOUT1+	45	TXE1+		
13	GND	LVDS_VCC	44				
GE5	14	TXIN14	LVDS_GND	43	LLVCC		
BE0	15	TXIN15	TXOUT2-	42	TXE2-		
BE6	16	TXIN16	TXOUT2+	41	TXE2+		
17	CLKSEL	CLK_OUT-	40	TXECK-			
BE7	18	TXIN17	CLK_OUT+	39	TXECK+		
BE1	19	TXIN18	TXOUT3-	38	TXE3-		
BE2	20	TXIN19	TXOUT3+	37	TXE3+		
21	GND	LVDS_GND	36				
BE3	22	TXIN20	PLL_GND	35			
BE4	23	TXIN21	PLL_VCC	34			
BE5	24	TXIN22	PLL_GND	33			
25	TXIN23	PWR_DWN	32				
26	VCC	TXCLKIN	31				
27	TXIN24	TXIN26	30				
28	TXIN25	GND	29				

MODEL NO.	Belinea 101910
MODEL	L2-190CA(3190-0092-0150)
CIRCUITRY	LVDS
AMTRAN TECHNOLGY	SHEET 6 OF 7
	REV: 20
	PCB REV: 22

APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-0512	ECN NO	APCN02020012	FILE:	L2190-60.SCH	VG191-M3.PCB	DATE 02-22-02



NOTE :
NC MEANS "NOT CONNECTED ON PCB BOARD"
ALL RESISTORS 1/10 WATT,5% UNLESS NOTED.
ALL RESISTOR VALUES IN OHMS UNLESS NOTED.
ALL CAPACITORS 50 VOLT & 105"C UNLESS NOTED.
ALL CAPACITOR VALUES IN uF UNLESS NOTED.
ALL CAPACITORS 25 VOLT IN .1uF UNLESS NOTED.
M = METAL 1%

MODEL NO.	Belinea 101910
MODEL	L2-190CA(3190-0092-0150)
CIRCUITRY	MAIN BOARD

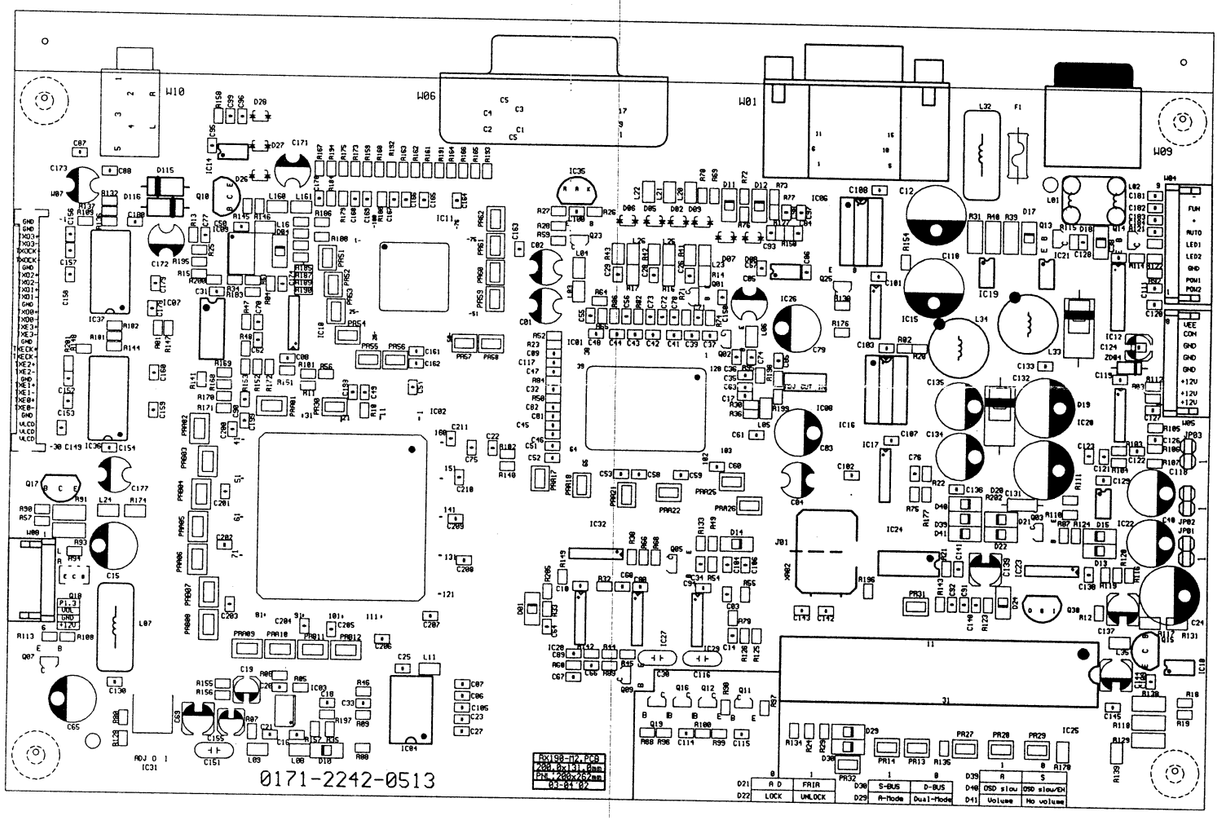
AMTRAN TECHNOLOGY

SHEET	7 OF 7
REV:	00
PCB REV:	02

APPROVED BY:		CHECKED BY:		PCB P/N	0171-2242-0512	ECN NO	APCN02020012	FILE:	L2190-70.SCH	VG191-M3.SCH	DATE 02-20-02

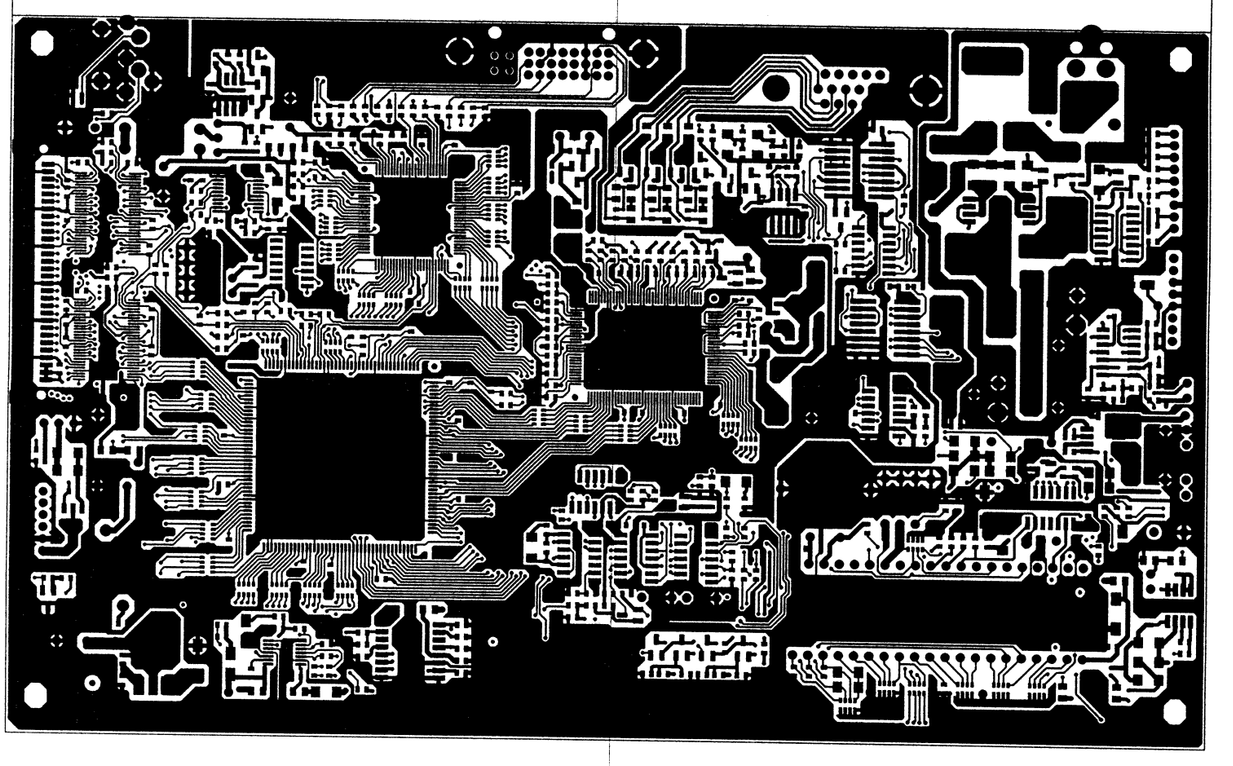
P/N :0171-2242-0513	DATE:03-04'02
MATE:FR4 4M 1.6T	REC.:03-11'02
SIZE:200.0X131.0MM	Q'TY:10 PCS
PNL.:200.0X262.0MM	RX190-M2.PCB

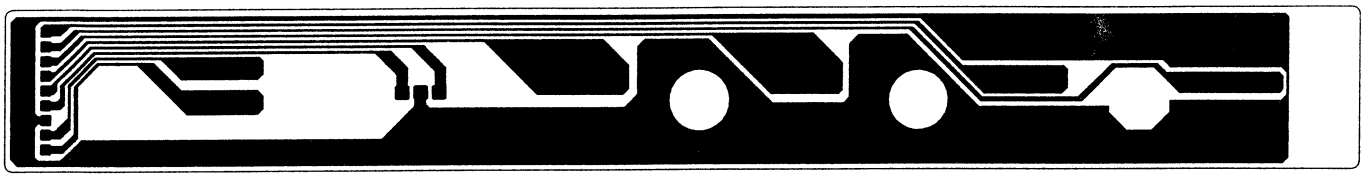
DRAWING BY:
CHECK BY:
COMP TEXT

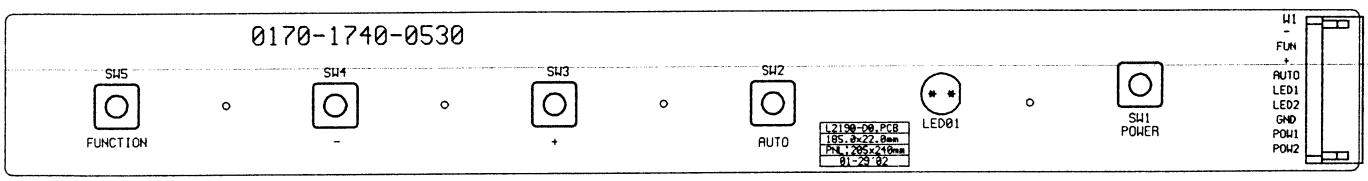


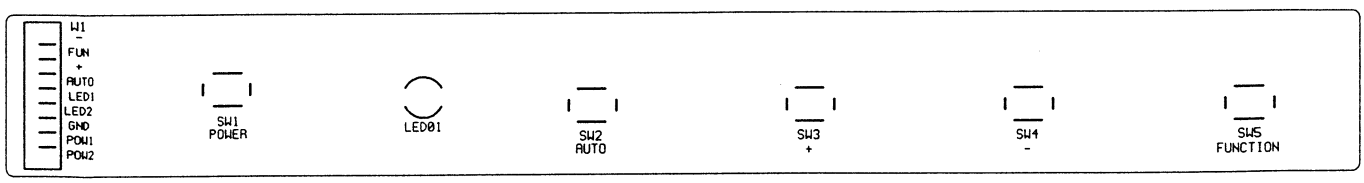
P/N :0171-2242-0513	DATE:03-04'02
MATE:FR4 4M 1.6T	REC.:03-11'02
SIZE:200.0X131.0MM	Q'TY:10 PCS
PNL.:200.0X262.0MM	RX190-M2.PCB

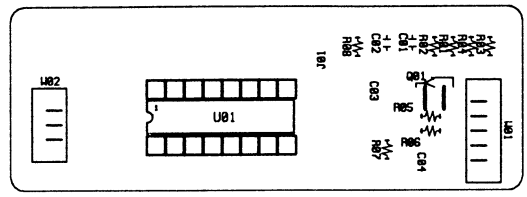
DRAWING BY:
CHECK BY:
COMP TRACE

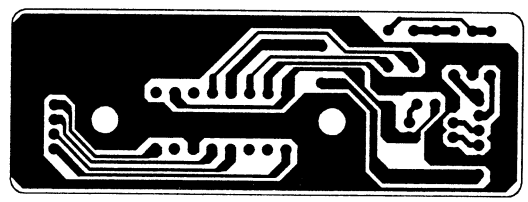





0170-1740-0530
SW5
FUNCTION
SW4
-
SW3
+
SW2
AUTO
L2150-00.PCB
105.0x22.0mm
Pnl:205x240mm
01-29-02
LED01
SW1
POWER
W1
-
FUN
+
AUTO
LED1
LED2
GND
POW1
POW2


W1
-
FUN
+
AUTO
LED1
LED2
GND
POW1
POW2
SW1
POWER
LED01
SW2
AUTO
SW3
+
SW4
-
SW5
FUNCTION


U02
U01
J01
R08
C02
C01
R02
R01
R03
R04
Q01
C03
R05
R06
R07
C04
LD1

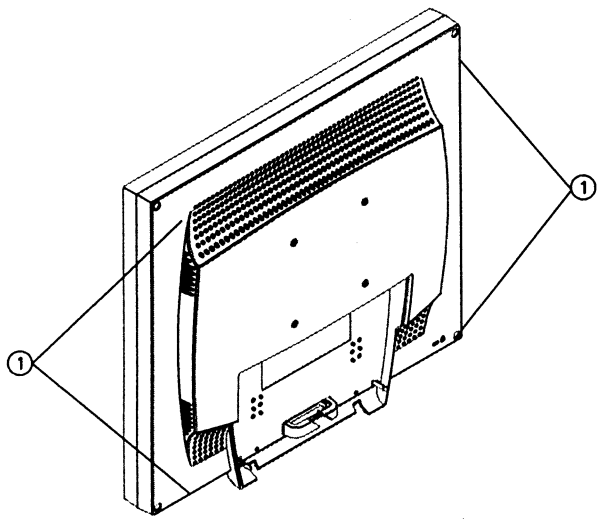


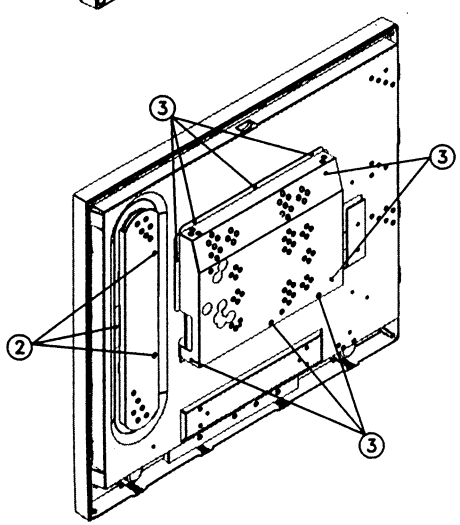
DISASSEMBLY INSTRUCTIONS

1.REAR COVER ASS'Y REMOVAL

Note:Spread a mat underneath to avoid damaging the LCD surface.

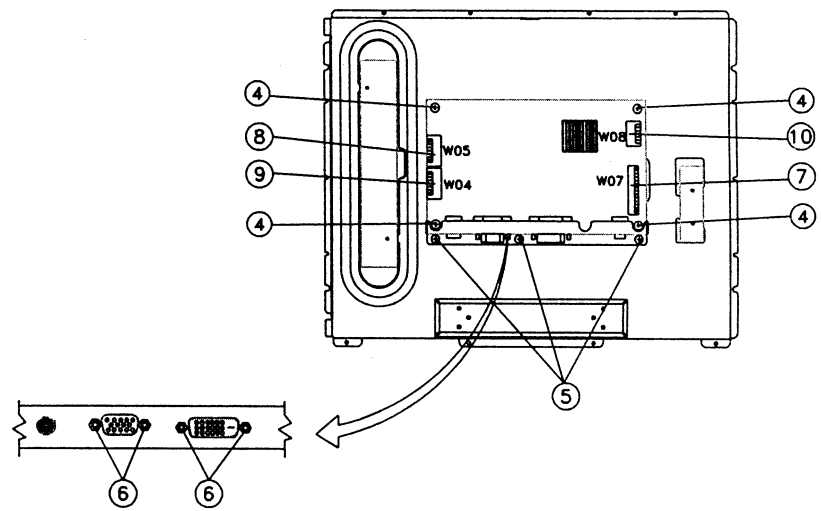
1) Remove four screws① from rear cover.
2) Separate the rear cover.
3) Remove three screws② from shield inverter.
4) Separate the shield inverter.
5) Remove nine screws③ from shield.
6) Separate the shield .





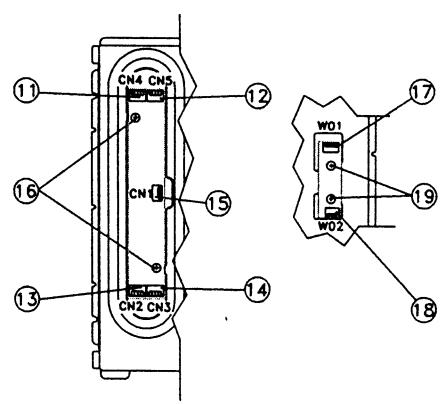
2. MAIN BD ASS'Y REMOVAL

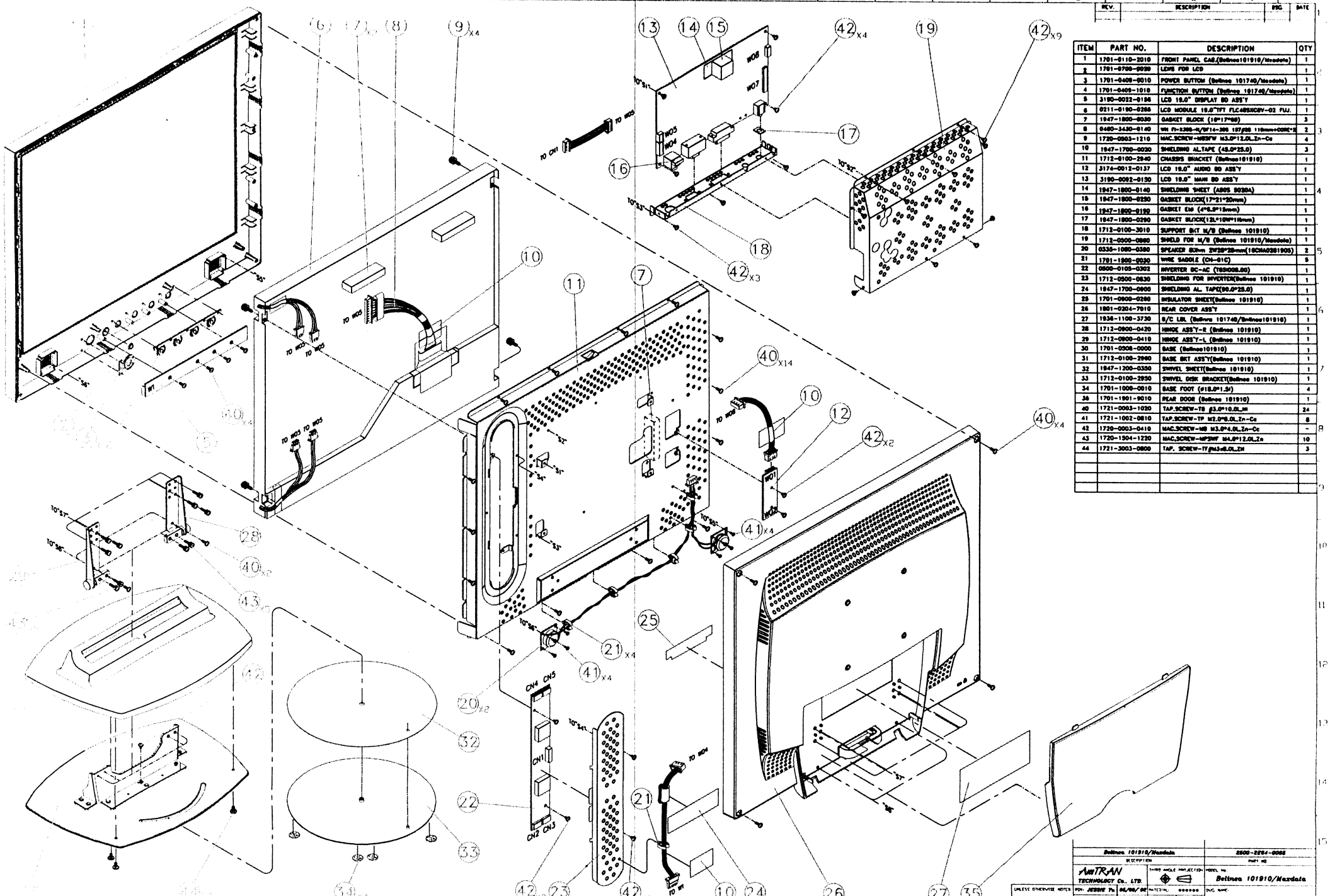
1) Remove the connector⑧ (W05) of the inverter cable.
2) Remove the connector⑨ (W04) of the keypad cable.
3) Remove the connector⑦ (W07) of the LVDS signal cable.
4) Remove the connector⑩ (W08) of the Audio cable.
5) Remove four screws ④from MAIN BD .
6) Remove three screws ⑤and four screws ⑥ from support bkt .
7) Separate the MAIN BD.



3. INVERTER DC-AC ASS'Y AND AUDIO BD ASS'Y REMOVAL

1) Remove the connector⑬ (CN2)⑫ (CN3) of the lamp cable.
2) Remove the connector⑪ (CN4)⑫ (CN5) of the lamp cable.
3) Remove the connector⑬ (CN1) of the inverter cable.
4) Remove two screws ⑭from inverter DC-AC .
5) Separate the inverter DC-AC .
6) Remove the connector ⑰(W01) of the Audio cable.
7) Remove the connector ⑱ (W02) of the speaker cable.
8) Remove two screws ⑲from Audio BD.
9) Separate the Audio BD.





REV.	DESCRIPTION	ENG.	DATE

ITEM	PART NO.	DESCRIPTION	QTY
1	1701-0110-2010	FRONT PANEL CAB.(Beltnes101910/Mandate)	1
2	1701-0708-0020	LENS FOR LCD	1
3	1701-0409-0010	POWER BUTTON (Beltnes 101740/Mandate)	1
4	1701-0409-1010	FUNCTION BUTTON (Beltnes 101740/Mandate)	1
5	3190-0032-0186	LCD 19.0" DISPLAY BD ASS'Y	1
6	0211-0190-0286	LCD MODULE 19.0"TFT FLC48SXCBV-02 FUJ.	1
7	1947-1800-0030	GASKET BLOCK (18*17*6m)	3
8	0460-3450-0140	WH FI-X30S-N/SF14-30S 187/28 110mm+CONN*2	2
9	1720-0003-1210	MAC,SCREW-WBSFW M3.0*12.0L,Zn-Cc	4
10	1947-1700-0020	SHIELDING AL.TAPE (48.0*25.0)	3
11	1712-0100-2940	CHASSIS BRACKET (Beltnes101910)	1
12	3174-0012-0137	LCD 19.0" AUDIO BD ASS'Y	1
13	3190-0082-0130	LCD 19.0" MAIN BD ASS'Y	1
14	1947-1800-0140	SHIELDING SHEET (ABS5 5030A)	1
15	1947-1800-0230	GASKET BLOCK(17*21*20mm)	1
16	1947-1800-0190	GASKET EMI (4*6.5*15mm)	1
17	1947-1800-0290	GASKET BLOCK(12L*10W*10mm)	1
18	1712-0100-3010	SUPPORT BKT M/B (Beltnes 101910)	1
19	1712-0500-0880	SHIELD FOR M/B (Beltnes 101910/Mandate)	1
20	0536-1080-0380	SPEAKER 8Ohm 2W28*28mm(18CHA0281905)	2
21	1701-1800-0030	WIRE SADDLE (CH-01C)	5
22	0600-0105-0302	INVERTER DC-AC (TBS1008.00)	1
23	1712-0500-0830	SHIELDING FOR INVERTER(Beltnes 101910)	1
24	1947-1700-0900	SHIELDING AL. TAPE(90.0*25.0)	1
25	1701-0900-0290	INSULATOR SHEET(Beltnes 101910)	1
26	1801-0204-7010	REAR COVER ASS'Y	1
27	1938-1100-3730	S/C LBL (Beltnes 101740/Beltnes101910)	1
28	1712-0900-0420	HINGE ASS'Y-R (Beltnes 101910)	1
29	1712-0900-0410	HINGE ASS'Y-L (Beltnes 101910)	1
30	1701-0508-0000	BASE (Beltnes101910)	1
31	1712-0100-2990	BASE BKT ASS'Y(Beltnes 101910)	1
32	1947-1200-0350	SWIVEL SHEET(Beltnes 101910)	1
33	1712-0100-2950	SWIVEL DISK BRACKET(Beltnes 101910)	1
34	1701-1000-0010	BASE FOOT (d18.0*1.5H)	4
35	1701-1901-9010	REAR DOOR (Beltnes 101910)	1
40	1721-0003-1020	TAP.SCREW-TB d3.0*10.0L,Hi	24
41	1721-1002-0810	TAP.SCREW-TP M2.0*8.0L,Zn-Cc	8
42	1720-0003-0410	MAC,SCREW-HB M3.0*4.0L,Zn-Cc	-
43	1720-1304-1220	MAC,SCREW-WFSWF M4.0*12.0L,Zn	10
44	1721-3003-0800	TAP. SCREW-TF(M3*8.0L,ZN	3

Beltnes 101910/Mandate		2500-2284-0082
DESCRIPTION		PART NO
AmTRAN TECHNOLOGY Co., LTD.	THIRD ANGLE PROJECTION	MODEL No. Beltnes 101910/Mandate
UNLESS OTHERWISE NOTED DIM: INCHES Tol. .XX ±0.10 .X ±0.2 ANG. ±1/2°	DWN. JESSIE Pa 06/06/06 CHK. APPD. MATERIAL DATE 1 SCALE Full	SIZE A DWG. NAME 19" CASE ASS'Y DWG No. 0500-2284-0082 REV. 0 SHEET 1 of 1